Military Miniatures IN REVIEW

Dragon Model's ZSU 23-4M Air Defense Vehicle

Tamiya's T-72M1 and accessories reviewed
DML & Tamiya's M1A1 with Mine Rake compared
DML Waffen SS Figures reviewed

SPECIAL INAUGURAL ISSUE

WHAT'S THE DEAL?
Who the heck are these guys?

Military Miniatures in Review is a brand new publication exploring the exciting hobby of military miniatures. It's content will be composed of armor kit reviews; useful how-to articles; book reviews; and features pertaining to armor related areas such as figures, accessories and diorama materials. We'll also include photo-reference articles and other unique features.

Our publication has been envisioned to fill the gap created by the national magazines that, due to space or advertising obligations, do not, or can not thoroughly address our hobby. Military Miniatures in Review will combine the quality content of smaller publications, such as the old "AMM Review" with the higher production standards of a national magazine.

WHO WRITES AND CONTRIBUTES ARTICLES?

You do! Military Miniatures in Review is primarily subscriber supported—a unique and risky idea. But, we feel the need is great for a pure modeler's forum. Our editorial philosophy is simple. Since we are not affiliated with any manufacturer and we do not depend solely on advertisers for our revenue, we can free ourselves to publish and accept honest reviews of products—sort of a "Consumer Report" of the hobby.

Our editors and contributors pay for the products they review—putting their hard-earned bucks on the line, just like the average modeler. So if a product is a poor value... you'll hear about it. Of course, if we think it's a good deal you'll hear about that too. *No matter who makes it, or where it's made.*

And since we are not burdened with maintaining or running a national organization like IPMS or AMM, we can fully concentrate our efforts on our publication. We are not *Fine Scale Modeler*: we are not *Military Modeler*; we are definitely not the *AMM Review* (it seems like everyone is saying that these days). We hope to contain the best elements of all three... and more!

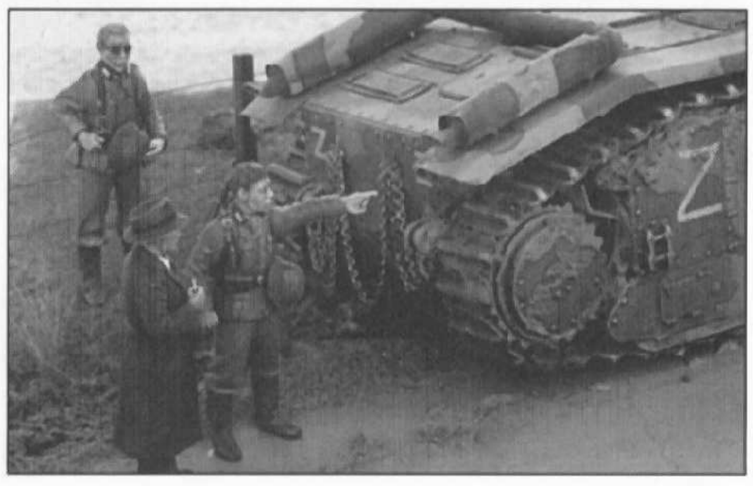
WHO WE ARE:

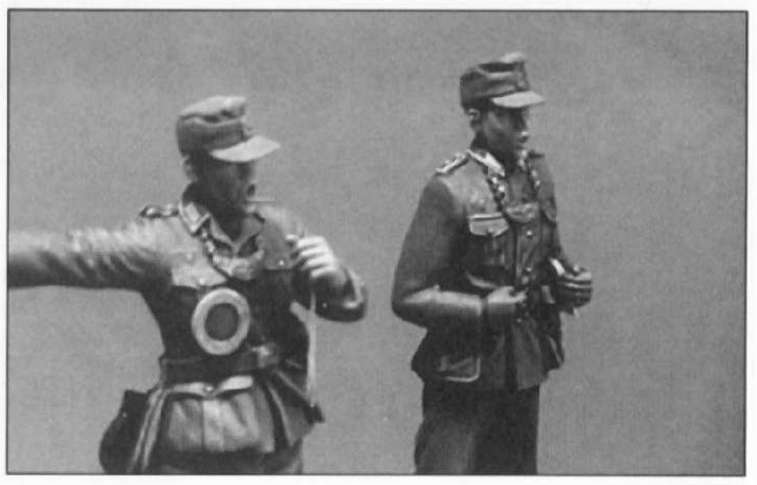
We are professionals in publishing and graphic design—with over 14 years of experience. We are also long-time modelers. We are prepared and equipped to produce a quality-oriented, informative publication on the world of military miniatures-on time, every time, from day one.

One other important thing worth mentioning: we are not a "not-for-profit" organization. How many times have you seen the so-called "not-for-profit" organizations put their "not-for" profits in their "not-for" pockets! We are dedicated to putting our profits right back into the publication to give you a more quality product each and every time.

THE BOTTOM LINE

Take a chance on us... For $17.95 per year you can invest in the future of this exciting hobby. Less than the cost of a plastic kit! And the cost of your subscription includes a free classified ad for one year. This hobby belongs to you... let your voice be heard. Sign on with us now and watch us grow. You'll be glad you did.





MILITARY
Miniatures
IN REVIEW

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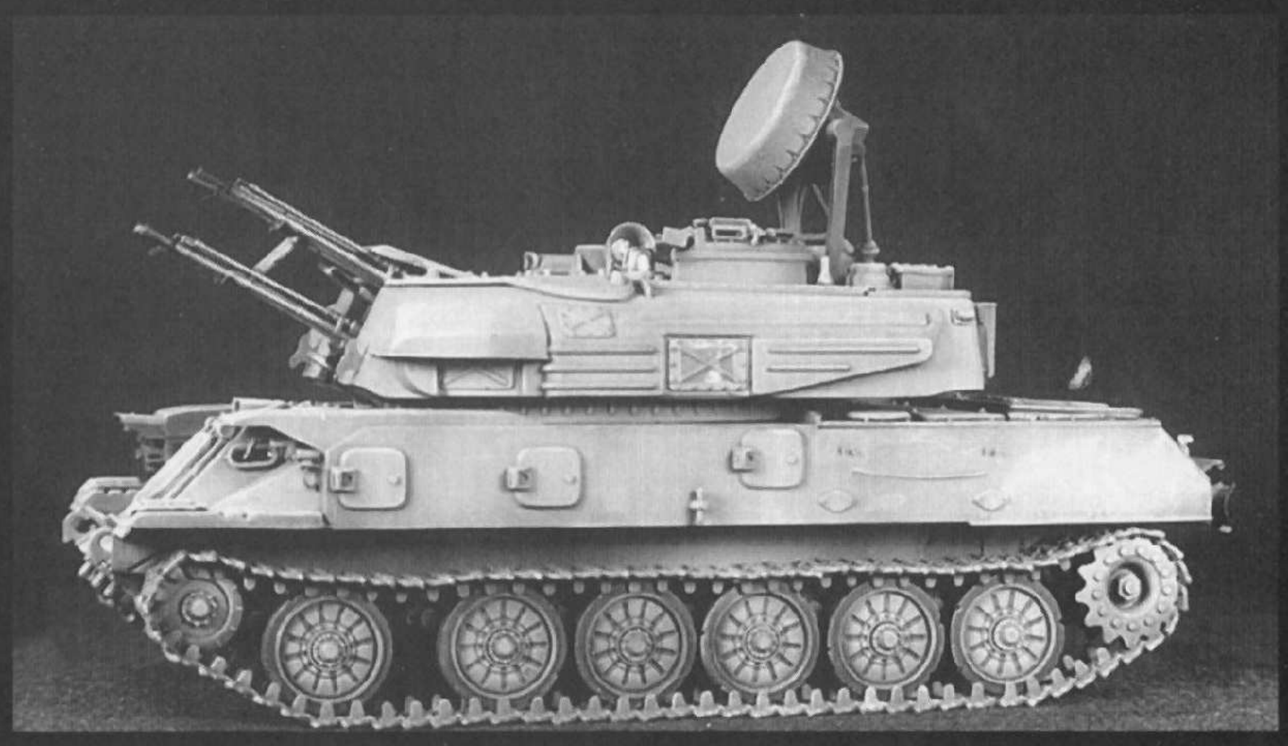
ON THE COVER

Dragon Model's ZSU 23-4M built and painted by Eric Knight. Eric spruced-up the kit with the MB Model's photo-etched detail set and scratch-built many other fittings. Description begins on page twenty six.



Introduction

Welcome to the pilot issue of "Military Miniatures in Review." We are proud to introduce this brand new publication.

We hope you enjoy your little walk through our magazine. This pilot issue was envisioned to give everyone an idea of where exactly we are going with this publication and what we are trying to accomplish. This is sort of the "Checkpoint Charley" to all subsequent issues (walls may crumble but metaphors remain). We think its a good idea to let you know what you're getting into, before you get into it.

We have tried to give our pilot issue a little more "shelf-life" and extend its timeliness by excluding some of the more dated features, such as book and magazine reviews. At the onset of our first dated issue we'll cover the release of all the latest books and publications, including some of the harder to find foreign magazines. Also missing, is what we hope to be one of the more intriguing aspects of this book; the Letters to the Editor column. Since we're brand new, we don't get many letters. We think that will change soon though, and by all means if you have something to day... let us know.

But the structure of most of our regular features is here. You'll notice a few things as you go. First, quite a few of the kits reviewed are shown unpainted (all but one actually). We want you to see these kits as they really are—stretch marks, varicose veins and all. You'll see where extra glue was needed, where and how certain parts attach and where all that putty goes. Painting will be a separate article whenever practical, and even painted models will be illustrated during their construction phase.

Next, if at all possible you'll see accessory kits reviewed along side the kits themselves. This should help to determine whether they are really needed or even worth the trouble. You will also notice that we actually buy everything we review (didn't we say that already?). No manufacturer's freebies here, dudes. The place of purchase is listed (you'll see the addresses of a lot of South Florida hobby shops) and the retail price. This will give you the feel for what you might find at your own local shop. If the product was ordered by mail, we'll tell you how long it took to receive, and how much the shipping was. And, if the product can be found at a discount, we'll let you know how and where.

You'll see a variety of subjects reviewed. This issue contains mostly modern items, but those were the newest items available when this whole deal came together. We have an extensive look at the long awaited Tamiya T-72M1, which includes reviews of the latest accessory items available for that kit. The ZSU 23-4M air defense vehicle by DML is also featured, along with its one available (so far) detailing sheet. And finally, we put the newcomers up against the "old-school" with head-to-head reviews of the M1A1 Abrams (mine-rake versions) from both Tamiya and DML.

If any one manufacturer products dominates this publication, it would be Dragon Models, Ltd. of Hong Kong. Die hard fans of DML (not to mention DML themselves) might be a little peeved, as many of our reviews are critical of their products. Readers should not regard this as bashing—on the contrary, we hope the criticism to be constructive. DML appears to have made a substantial commitment to our hobby with a steady flow of new releases. Considering the enormous cost of tooling injection molded kits, we think its safe to assume these guys are here to stay. In other words: sooner or later they're gonna get it right... really right. And we don't think this will happen unless we (that's us and you) let 'em know what's what. Consider the quality of Tamiya kits two years into their first release schedule, circa 1973. Compare the level of detail in those old kits (the M10, the Easy Eight Sherman, the original King Tiger) with the most current DML releases—those old kits don't stand up.

Well that's our little speech, so dive right in with both feet and enjoy this issue, and by all means let us know what you think. Or better yet, buy a subscription!

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Say what you want, but do try to back up what you say. Just saying you loved (or hated) something just won't cut it. Tell us **WHY**. Support that argument. S'plain yourself. Include information about where the kit or product was purchased, its cost and any other pertinent details.

Send photos! If you're good at it, we accept quality 35mm slides or prints, color or black and white.

Save that Instamatic stuff for the scrap book. If you or a friend can't swing the photos, we can accept the articles either way. Your copy should be typed, or written neatly in longhand, and when you write... don't be bashful, we like it when you blather on.

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What's your beef? What's your gripe? What bugs ya? Wanna get something off your chest? We want to know about it. Write us with your comments and criticisms. Negative and positive alike.
We want to hear it all.

Got a comment about this rag? Let us know. We want to hear about anything having to do with the hobby. And we mean anything. Kits got you down? Too many bubbles in that expensive resin kit? Or is that manufacturer not responding to your letters? And the prices! Oh man the prices! Sky high and heading up! Tell us!

Here's the deal: as long as its not libelous (like so-and-so is married to a donkey) or profane (you know, dirty), we'll print it. And, if you don't like it (or if you do),
WRITE US!

There's literally a ton of stuff going on in this hobby, and everyone has something to say about it. Well here's the place to say it. Does anyone remember the raging controversy a few years back when an American modeler dared to criticize the British judging system? Letters flew across the Atlantic, British modelers cheered, jeered and wrote. American modelers followed suit. The very future of Anglo-American relations hung in the balance—you just can't buy entertainment like that.

So put pen to paper, dear modeler, and let's hear what you have to say!

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Military Miniatures in Review Book Services

From time to time MMIR will offer certain other publications for sale at discount prices. We will try to concentrate on the more hard to find, expensive subjects. Discounts will range from fifteen to thirty percent, and will be available to subscribers only. This will NOT, we repeat NOT, be a "stockless" system, all publications will be in stock when listed. Watch future issues for current titles.

T-72 M1

Reviewing the Tamiya kit and the MB Model's brass detailing set.

Overall view of the finished model. Note the brass and resin add-on pieces which are seen as the lighter colored areas.

by KEN DUGAN

I've something of a confession to make. I'm a Tamiya junkie. I've always loved their kits. My very first model (was it really over 20 years ago?) was a Tamiya kit. So, I have always regarded a new release from them with more than a little fanfare.

Well, I think that fanfare is not an overstatement when describing the release of Tamiya's T-72M1. It is a fabulous kit. Like the previous Tiger I, this kit is all scale replica from the ground up. No motorization holes and battery brackets to hack up and fill over. It reminds me of earlier Italeri kits in its approach to overall detail.

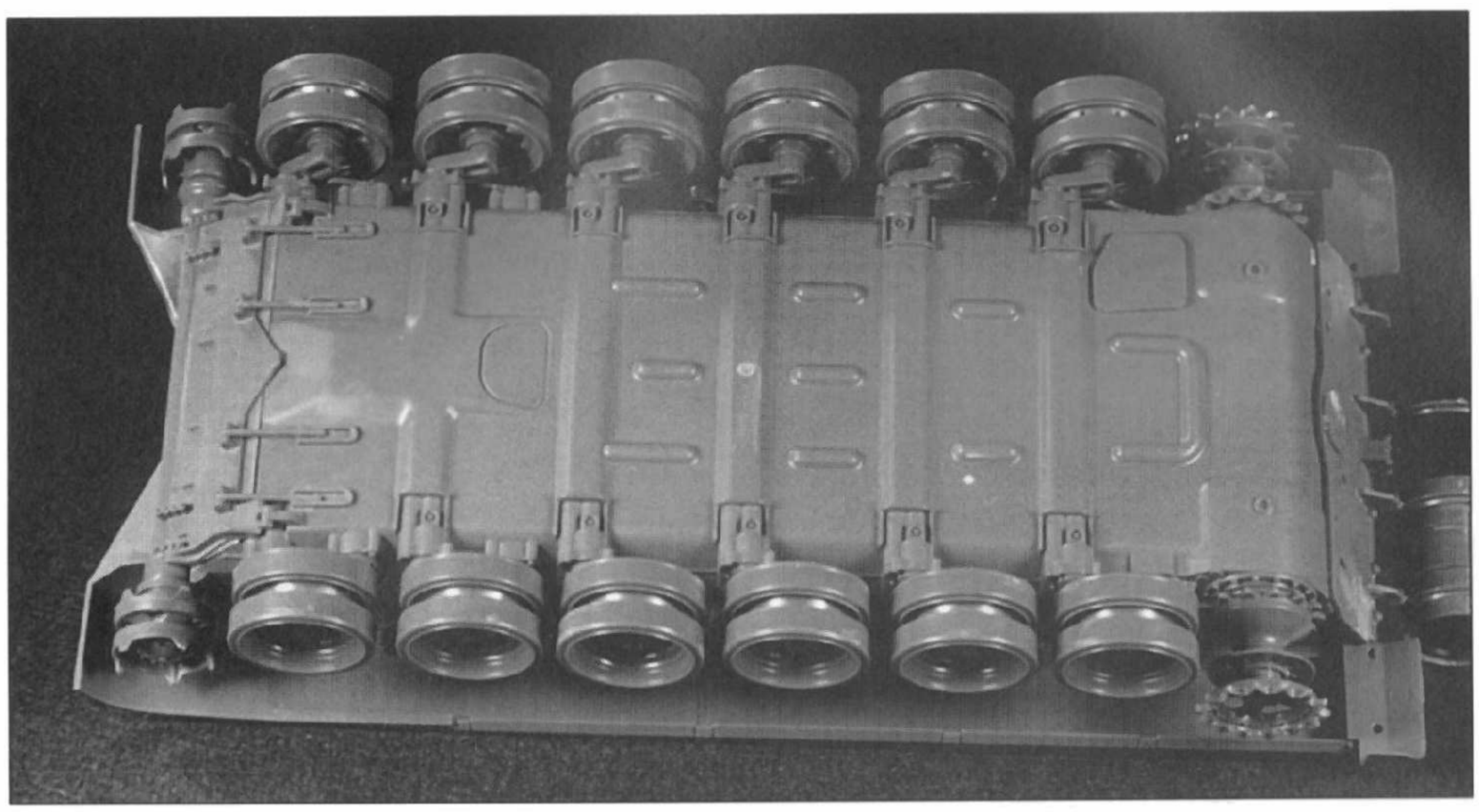
This is going to be somewhat of an unconventional approach to reviewing a kit. You see, before you could bat an eye, two different manufacturers released update/detailing sets. But if the kit's so good why add extra detail? Well, in my opinion never before has there been the immediate availability of so much cool stuff for such a good kit. What this means exactly is that anyone with even moderate modeling skills can build a near masterpiece. This kit and its updates create a finished model that far exceeds the level of detail found in the so-called "high-tech" kits from Japan.

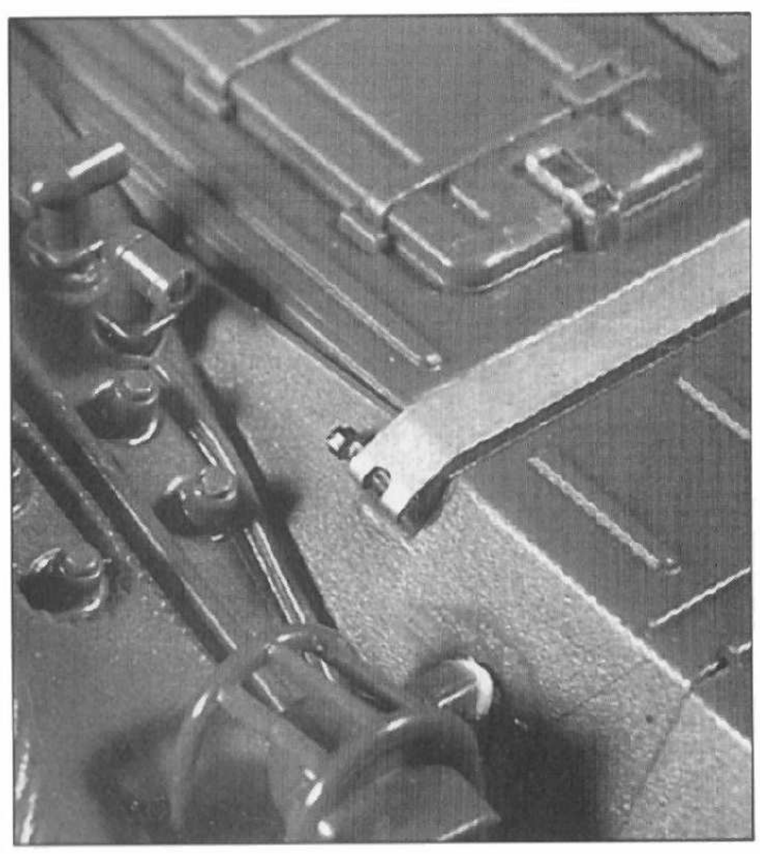
Now, now. I hear everyone yelling out there: "the price of kits is too high... at what price this masterpiece?" Well we are going to let you know just how good all this stuff is and how much it costs. You can decide if its all worth it. Any one of these items will enhance the Tamiya kit, which on its own is a very good kit. And, after all is said and done, maybe a simpler version of the T-72 (like the Ertl or DML) would be more satisfying for some modelers.

Another unconventional aspect to this article is that the kit will be illustrated unpainted.

The Products

The Tamiya kit comes packaged in the traditional large white box. The customary enormous painting of the tank covers the top. When you open the box, the





Left: a look at the remarkably intricate hull bottom. Right: the MB brass stowage strap.

first thing you'll notice is the larger-than-usual instruction sheet. It is not actually a sheet, its more like a booklet. I like this. The booklet is sixteen pages long and begins with the obligatory short history of the tank, but then jumps to two pages of pen and ink renderings of the T-72M1 and its various details. Examples of in service equipment are shown as well as drawings of the turret variants. A few details of Iraqi (described as desert versions) vehicles are also included, and various options for these versions are presented during assembly.

There are four sprue trees of plastic parts, a small bag of detail parts, a single sheet of photo-etched stainless steel and a decal sheet.

The MB Model's brass set is packaged in a simple flat bag and flap arrangement. A three-page instruction sheet accompanies the set. Small drawings illustrate the installation of the various parts. Most of the parts are replacement parts for the kit's, and pertain to the front and rear hull, and the turret. The majority of parts are installed on the turret.

The Verlinden Update set is packaged in the familiar camo-style box with a colored photo on the top. Included are resin parts and a photo-etched sheet. An instruction sheet with line drawings explains assembly. The parts included cover two specific areas; the turret and the engine deck.

Construction

Since so many of the add-on parts are meant to substitute the plastic parts, I'll build and review the kit and show how, and when to add the update items. I'll cover the specific installation procedures of the aftermarket items following the sequence of the Tamiya instructions. This is not how either the Verlinden or the MB instructions recommend, but it seemed less confusing to describe it this way. This also results in a sturdier platform to add the brass to. In the photos you'll see the stock parts compared with their aftermarket replacements.

Assembly begins with the bottom hull (which is fully detailed) with the addition of the suspension components and the dozer blade. In Step two the back hull piece, B15 will contain some of the MB brass items, so if you are adding these, leave off the log holder brackets, parts A11 and A18 and fill their locating holes. The replacement brass items (MB part L) folded up well, and as suggested, I installed them slightly below where their plastic counterparts would have been. This helps the log, when installed, clear the fuel tank brackets. The fuel tank brackets install in step five, but you should test fit or install now.

The MB set provides brackets for the spare track links located on the rear hull plate (MB part K). The MB instructions say that they only need be installed if you wish to show the brackets empty. I only installed one for comparison purposes.

The construction of the wheels presented no problems. Each bogie assembly utilizes the soft plastic inner piece as in most previous Tamiya kits. This enables the wheels to be installed without glue and leaves them free to rotate, which comes in handy when painting the outer rubber rims.

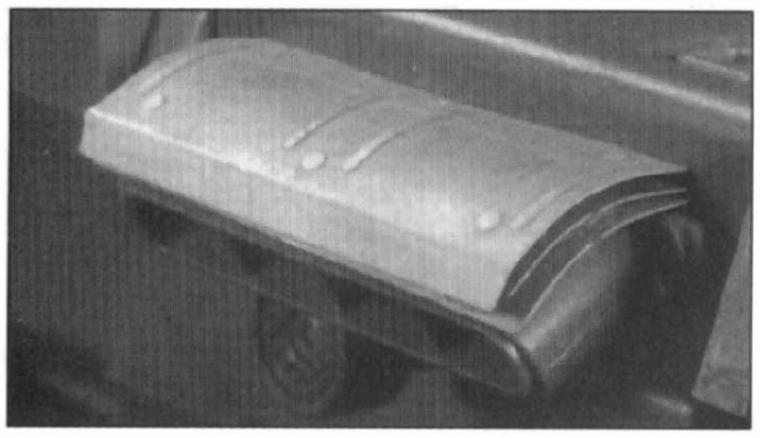
The finished lower hull is very handsome the detail around the bogies is especially nice. Unfortunately, the side skirts and tracks hide much of this detail.

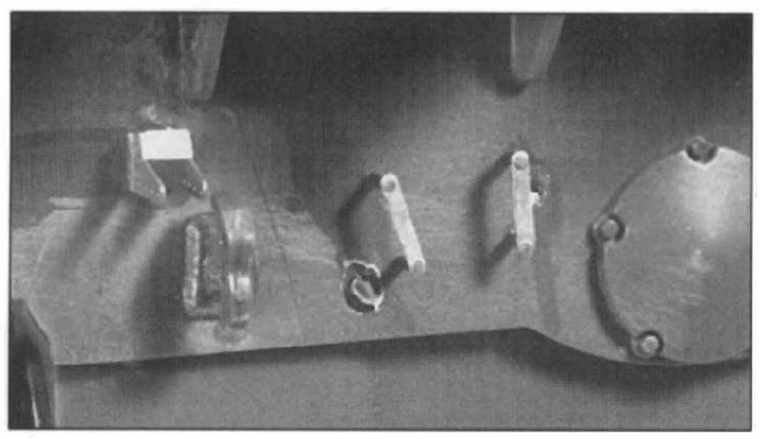
Step six in the Tamiya instructions illustrates the installation of the mounting points for the mine roller assembly (although they are not identified as such). These are parts B70 and B69. I'm hoping that Tamiya will release a subsequent version which includes a mine clearing assembly, like they did with the M1A1 Abrams.

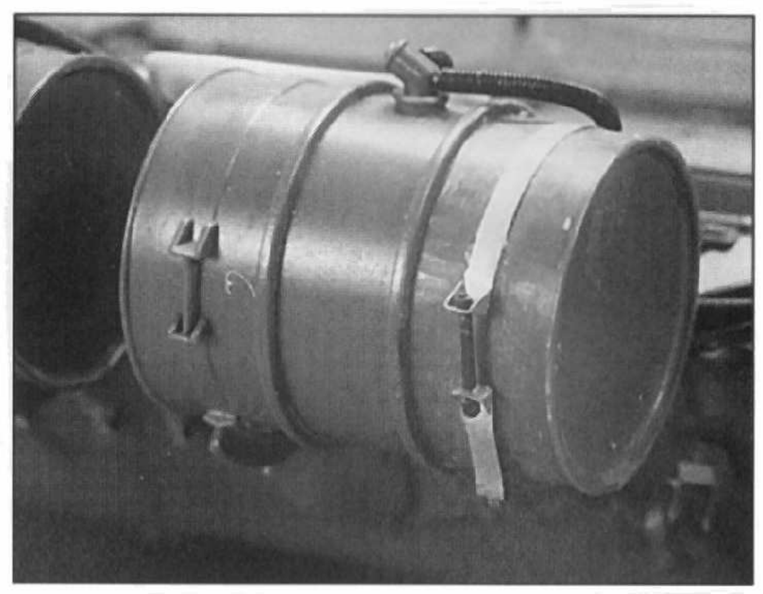
The upper and lower hulls were joined at this stage.

The main exhaust port is covered in Step six and the cover, part B24 is replaced by parts from the MB brass set (parts S). Parts B23 and B16 can be installed. The MB parts construct the layered cooling fins of the exhaust port and more accurately represent this area than the kit part. Three pieces of brass are used to create the replacement.

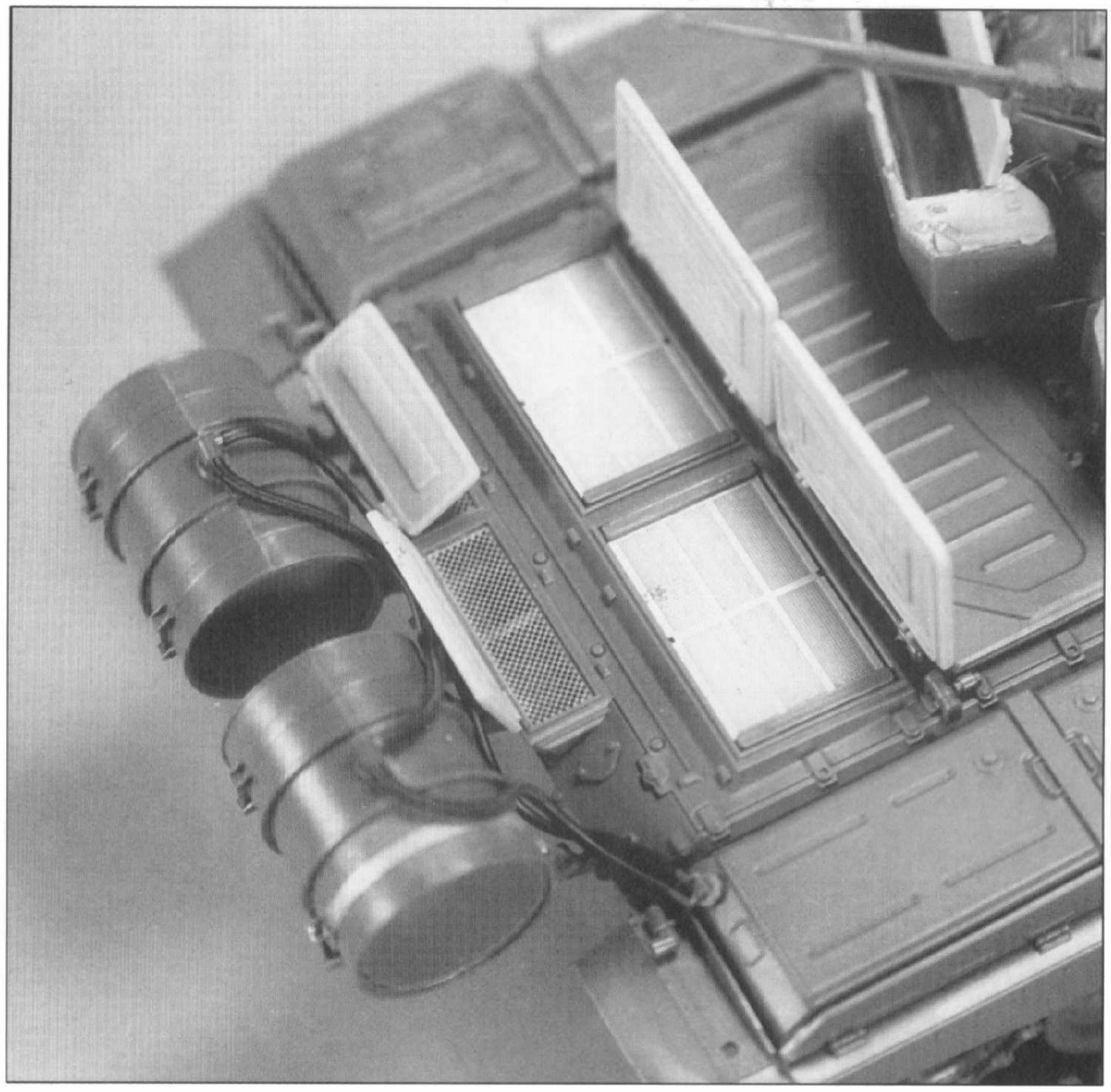
Step seven illustrates the detailing of the front hull. Part B26 is represented by MB parts P and Q, so the kit part was left off and it's locating holes filled. The replacement is a one-piece V-shape which bends down the center to form the part. Four brackets are included and they install behind the raised rivet detail. Its a little tricky getting them all to stay flat against the hull, a little extra







Above left: the layered brass exhaust port. Above middle: the rear lower hull sporting the brass log and spare track brackets. Above right: close-up of the fuel drum. Compare the kit's strap with its replacement. Below: overall shot of the rear deck showing all the goodies installed.



bending here and there was necessary. I salvaged the weld bead from the kit part as suggested in the MB instructions.

I was initially tempted to replace the lamp guard frames (parts A17) because I thought they were too thick. But, after checking my references I decided they were just about right.

Another part which surprised me is the tow cable. One might normally scrap this in favor of wire. It is so nicely detailed that I installed it as is. Even the hold-down brackets are nice. The only thing that could be added is the C-shaped bracket which secured the upper end of the cable. One could be fabricated from thin brass and sprue.

The MB set provides panels for the front fender area, part O. These replace the area just inside the front fenders. They require some rather sharp bends — you're going to need some flat nosed pliers for this. The photos show the part installed next to the stock fender.

Tamiya's Step eight covers the detailing of the back hull. In what I believe is a first for Tamiya, they have included a small sheet of their own photo-etched stainless steel. The parts are for the main engine deck vent screens. They drop right in and fit perfectly.

The aforementioned tow cable is represented by cotton twine on the rear hull, with the heads molded in plastic—go figure.

The large deep wading flap is only detailed on one side, it would have been nice to show it installed in the dry position. Deep wading flaps for the screens are not provided in the kit, although they are included in the Verlinden set.

The Verlinden covers fit well over the kit's openings and are excellent additions to the kit. All the covers are detailed on both sides, so they can be installed opened or closed. Both sets of covers install with the raised detail facing up. The large covers install with their hinge detail facing the front. The hinges locate on the rail of the main flap. The instructions don't mention the smaller covers, but they should be installed with the hinges facing the rear.

Step eight also calls for the installation of mesh in part B14. This is provided in the kit and needs to be cut to shape using a pattern shown in the instructions. Two, one-piece screens are provided in the MB set (parts T), so the Tamiya screens were discarded and the MB ones installed. The screens and the covers really dress up the engine deck.

At this point the tracks would normally be left off in anticipation of painting. My one major gripe with this kit is the tracks. I would have thought that Tamiya would continue the tread established with its Tiger I, of including link-to-link hard plastic track. This is not the case with the T-72. The tracks included are the vinyl type. I like the feel of the harder plastic and I think its easier to paint and handle.

On the good side, the attachment joint for each vinyl track is very cleverly concealed in the center portion of one link, but on the bad side, the joint runs along the length of the pinned area of the link. This is very difficult to fix, but I suppose the saving grace of all this is that it all can be hidden behind the side skirts.

If you wish to show your model with the skirts removed, you could always pillage a

set of the DML strip and link tracks.

The side skirts were installed on our example. The hard rubber surface of the skirts is rendered flawlessly. Again, just a small gripe here. The front of the skirts, which form the front fenders don't line up, creating a slight "hop" in the front fender panel. The actual fender is a one piece pressed metal shape. This gap doesn't quite render the proper effect.

Step nine covers the installation of the rear fuel drums. The MB set includes a set of replacement straps for the fuel drums (parts M and N), so the drums should be installed after the replacement straps. The fuel feeder lines are included in the Tamiya kit. This is one of the more interesting parts of the vehicle, and Tamiya offers a very creative solution for modeling the area. Some of the feeder lines on the T-72 were made from a ribbed tubing. The rest were smooth. Tamiya provides a long, very tightly coiled spring to represent the ribbed tubing. Its very convincing. Vinyl tubing represents the other lines. Copper wire is enclosed to insert inside the tubing to give it shape. A small measuring diagram shows the proper length of each.

Installing the straps requires that the drums be fully assembled. They are each composed of four parts. I let mine dry overnight after assembly. The barrels themselves went together easily, but the fit was not too great. The barrel ends left some gaps which would be difficult to fill.

First remove the molded on strap. Use a sharp blade in your knife and be careful not to nick any of the other details. I wet sanded any remaining imperfections. The installation is a bit demanding but the results are pretty impressive. The photos show the stock straps and their replacements. Grandt line nuts are required to cap the rods which hold the straps together. The MB instruction sheet states the proper size.

After installing of the barrels I added the two different types of fuel feed tubing. I cut each section of tubing first, then inserted the copper wire. I found the spring tubing hard to cut—make sure to use a sharp pair of manicure scissors. The lengths shown in the instructions are a little long, which will allow some room for error.

The copper wire inside the tubing helps to stiffen the tubes when bent to

Rear deck from above. Copper wire inside the fuel lines help them keep their shape.

shape. I used the Tamiya instructions as a guide. One of the springed hoses wouldn't lay down against the left side drum, so I tacked it down with superglue.

The MB set provides ten replacement straps for the hull (MB part R). These are to replace the straps which hold down all the stowage boxes and fuel panniers. The MB instructions state that the kit's straps can be removed or the new straps can be installed over the existing ones. Removing them seemed like a bear, so I opted to install one over the existing detail. Each strap requires some extra detailing with the addition of some sprue and a Grandt Line nut to represent the connecting end. I only installed one strap to illustrate the part, and I can say this level of detailing will not be everyone's cup of tea. It would be very time consuming to install and detail all ten. But then, time consumption is what some modelers crave. If you set out to do this, you probably will be pleased with the results, as the finished parts are very realistic.

While we are on the subject of excruciating levels of detail, also provided in the MB kit are some fifty-four stowage bin clasps. These are the little hinge clasps that cover the T-72. They are found along the left fender and on the turret stowage bins. I'm not quite sure how to react to these. When properly folded and placed on the vehicle they represent the real part almost exactly, they even contain a small etched rivet on both sides! But the prospect of adding 36 of them to the vehicle is more than a little intimidating. You will need to remove all the molded on clasps from the left fender and the stowage boxes. If you use the Verlinden box lids, which are molded smooth, you can just add them to the lids. I added one to the fender and I used the full complement on the turret stowage boxes (they're actually very nice), but more on that later.

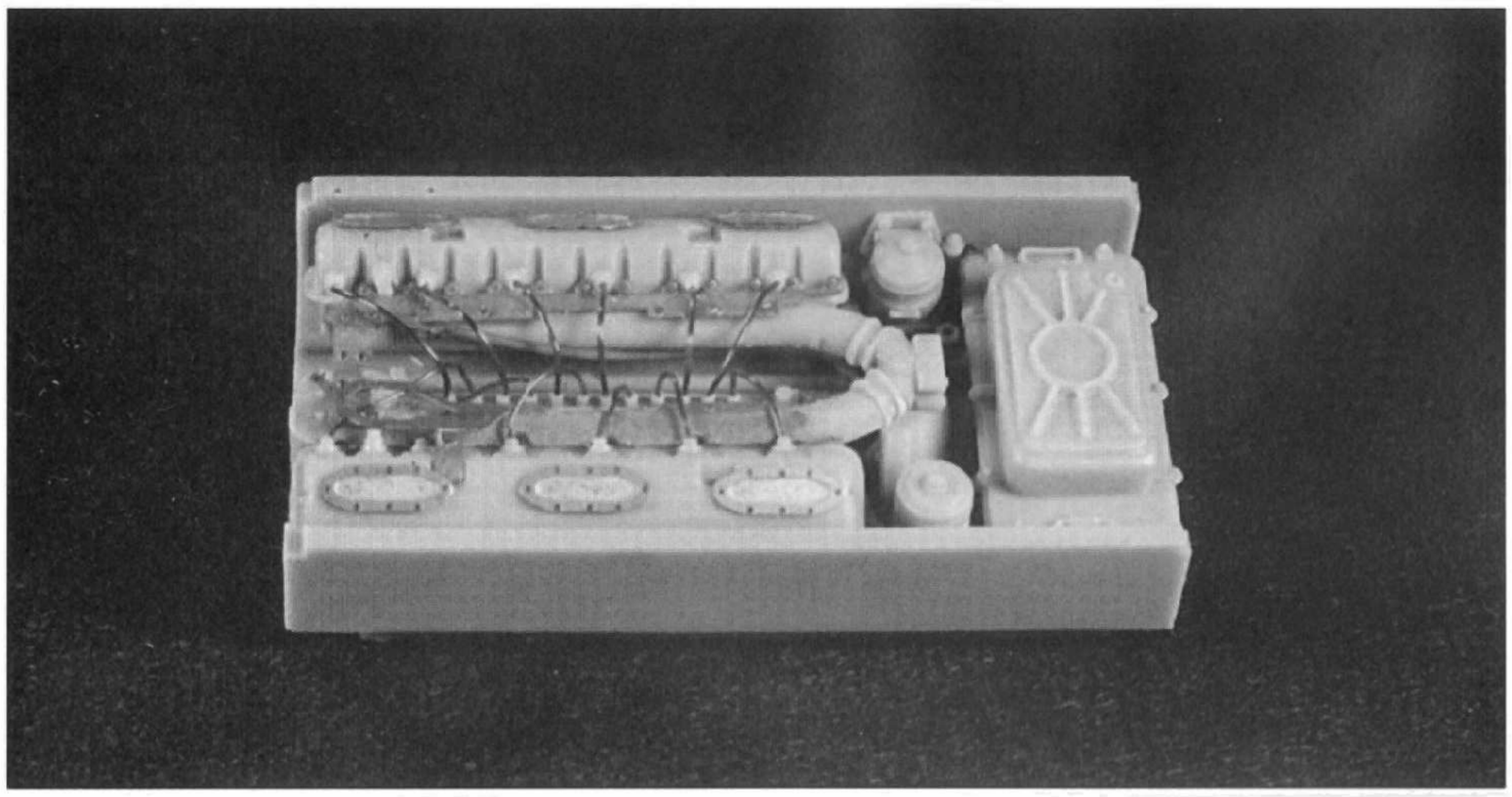
In one of the few instances of duplication, the Verlinden set includes these clasps for their bin lids. They are not well formed, being very basic rectangles. If you're going to all the trouble of installing them, I'd opt for the more accurate MB clasps. The Verlinden set only includes enough for the stowage bins anyway.

Another case of duplication is MB part V and Verlinden (brass) part 17. This part is a dust cover for the small screened vent found just behind the right side of the turret. Either part fits, but I thought the MB part was etched a little better. In the Verlinden instructions this part is stated as optional, but I've seen it installed on both Middle Eastern and European versions of the T-72.

The Verlinden Engine

The Verlinden set contains a recessed engine module. It is molded as a one piece unit depicting the top of the engine block, the air cleaning units and the exhaust manifold. Etched detail parts, copper wire and vinyl tubing are also provided.

The instructions show an exploded view of the engine area and a photo. Most of it went together easily. I drilled out the receiving ends for the wiring and used the copper wire supplied. The casting quality was good enough to still



The Verlinden replacement engine module.

reveal the indentations in the wiring points! I used a number 74 drill bit.

Things got a bit confusing in Step three of the Verlinden instructions. It is not quite clear how the manifolds go together or how their brass details fit into the whole scheme. The single photo was a little dark on my example, and didn't help in this area. The same held true for the tubing provided. I guess a little gizmology is in order here.

This finished module is meant to be installed from underneath the hull after cutting away the engine hatch. A resin replacement hatch is provided. The replacement hatch is not detailed on the underside, which is the area which would get the most attention.

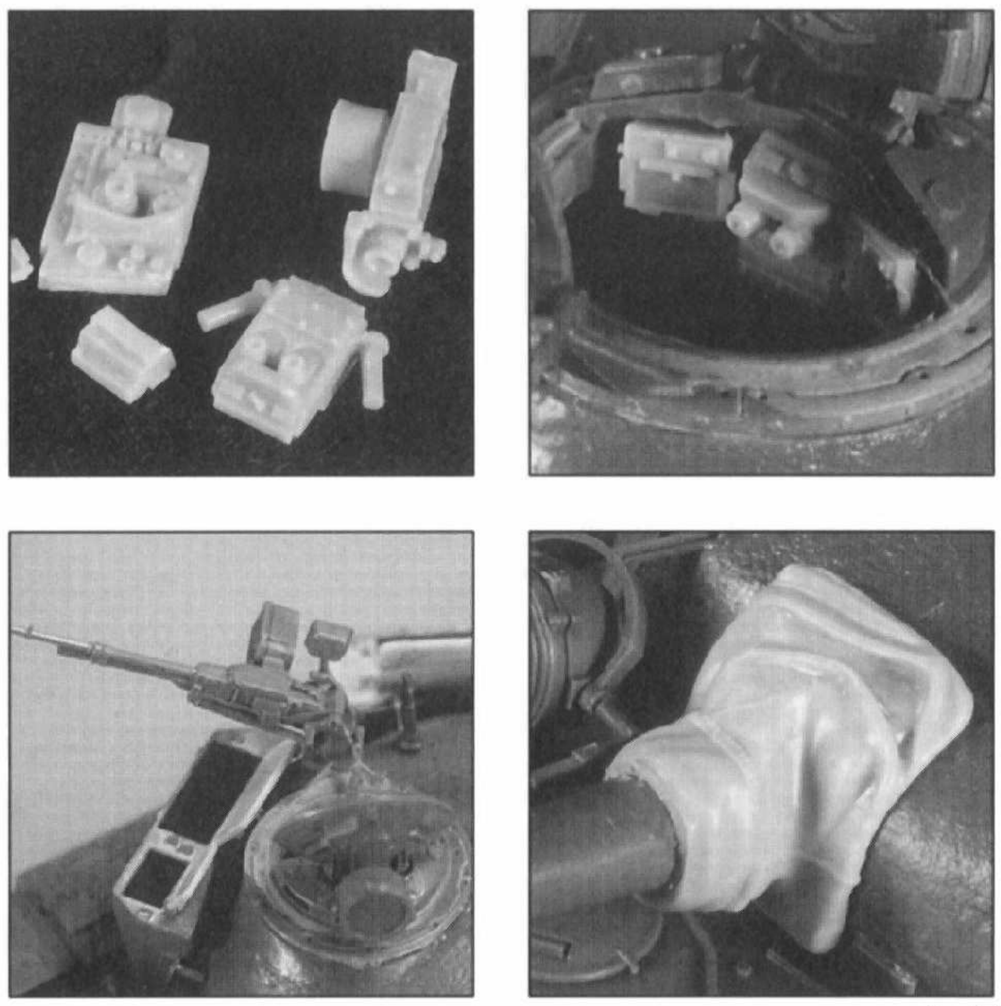
This module builds up into a effective little model all by itself, but to be perfectly frank... I'm not taking a razor saw to my fifty-dollar model. I still would recommend it to modelers who can stomach the surgery, as I thought the finished effect was impressive.

The Turret

Most of the additional detail in this project is on the turret. The Tamiya turret is a basic two piece assembly. The fit was not perfect and required some filling in the rear and at the front edges. Since I was going to use all the brass items I could on the turret, I also filled the locating holes for the smoke launchers, snorkel tube and the rear stowage bin. The turret was then set aside to dry.

A three-piece replacement gun assembly is provided in the Verlinden set. Two parts make up the barrel, and the third the gun base cover. The gun is a rather curious item to include, as the Tamiya gun barrel is rendered quite well. The Verlinden set also includes brass clasps which are supposed to represent the clamps for the thermal sleeve of the gun barrel. They are rather oversized and not at all like my references show. Another drawback is that the etched brass ring provided for the gun base (Verlinden part 12) doesn't even come close to fitting. The good news is that the gun cover itself is beautifully sculpted and fits into the turret perfectly.

So, I decided on the best of both worlds. I removed the gun base from the Tamiya barrel and replaced it with the Verlinden item. Before fastening the two pieces together I added the MB gun ring (part A), which fits well around the base of the Tamiya barrel. The whole assembly was then installed into the turret.



Clockwise from top left: the VP periscope pieces; after installation in the hatch; the turret MG; the VP gun cover and MB gun ring.

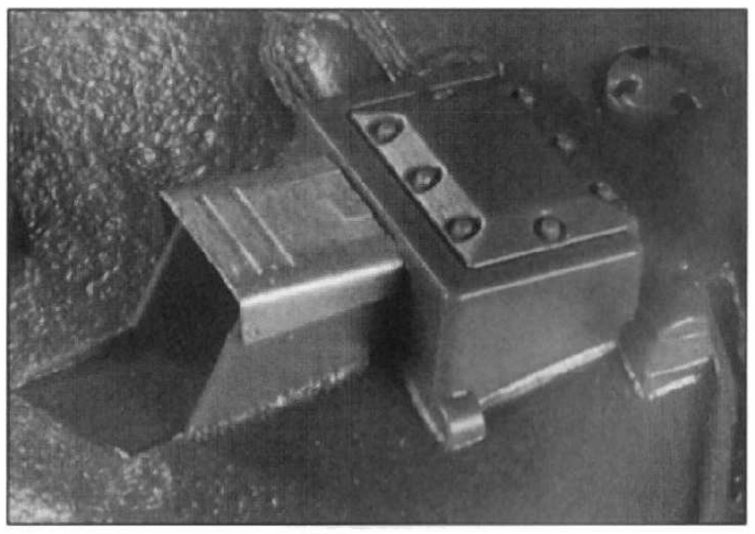
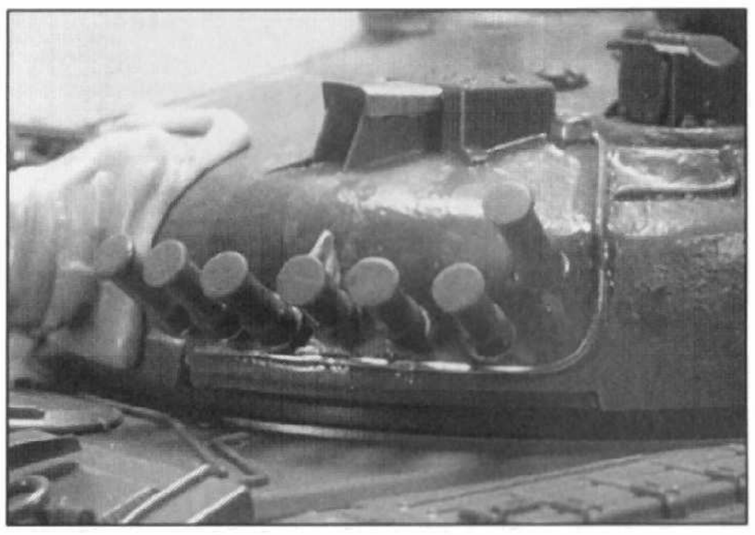
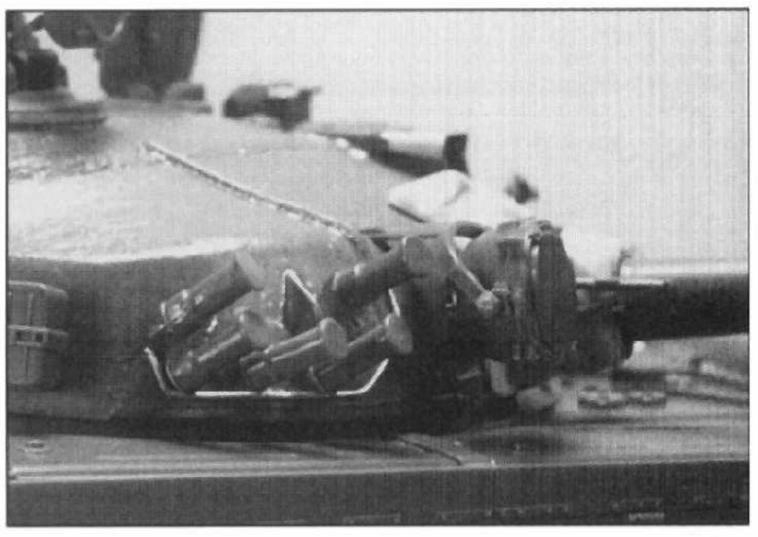
After installing the gun, I added the main searchlight assembly (Step twenty in Tamiya instructions). I trimmed off the locating pin that attaches to the gun cover and tacked this portion of the arm to the Verlinden gun cover. The searchlight arm (Tamiya part B6) was too long. It needs to sit closer to the turret. I removed about one-eighth of an inch to give it the correct look.

The MB set includes numbered ID (MB parts J1 and J2) plates for the face of part B68. The numbers correspond to the kit's decals. You get a choice of three different plates. This was one of my favorite parts in the MB set and it looks very convincing when installed. Other parts added to the turret (all MB items) were sight covers; MB parts F and I (replacing kit parts B75 and B76), commander's hinge ring detail; MB part D (not on the plastic kit); and the commander's searchlight frame; MB parts E (modifying part B54). Assembly of the searchlight frame requires minor surgery on the kit parts B61 and B54, as the frame is molded on the actual light housing.

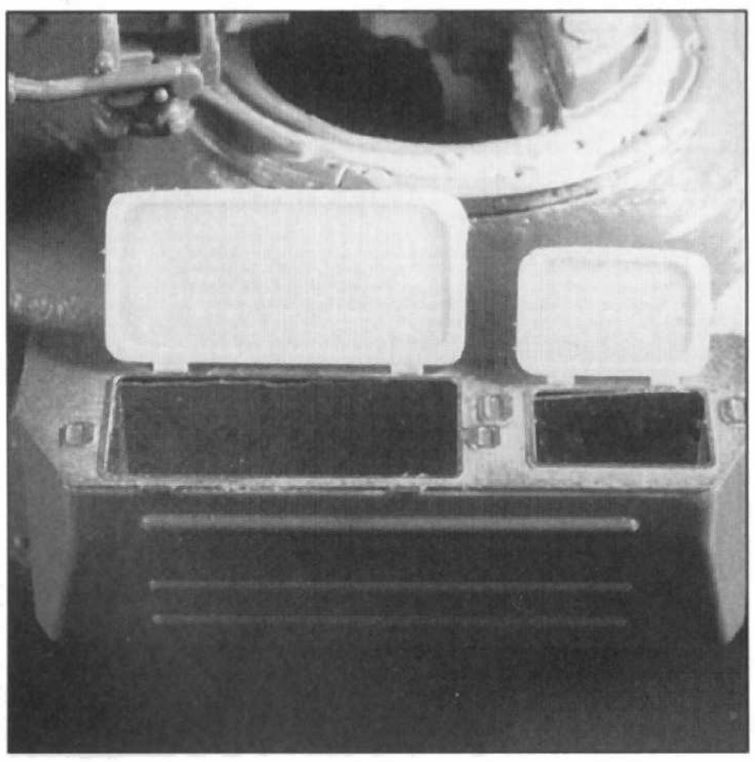
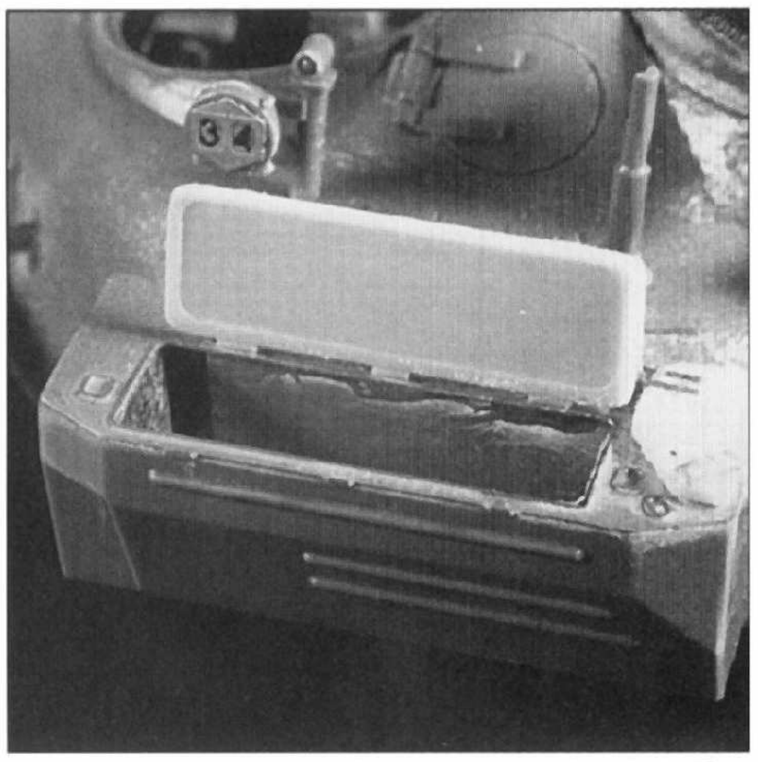
The Verlinden set includes various sights and periscopes which are visible when the hatches are shown in their open position. Provided are the main and auxiliary sights for the gunner's hatch and the commander's primary sight along with its two adjacent vision blocks. All the pieces are well molded and definitely dress up the openings. The kit hatches themselves are very well detailed, the spall lining being especially realistic. Each hatch consists of an inner and outer piece.

Almost a model in itself is the 12.7mm gun for the turret roof. Consisting of ten parts, its a convincing replica. Be careful of part B35 though, the part is a little difficult to identify and I originally installed mine upside down.

The snorkel tube (Tamiya Step Fifteen) gets new attachment brackets from the MB set (part H). They install right over the locating areas for the kit's parts (which must be filled and sanded first). I found the completed brackets to be just slightly longer than those in the kit,

Above from left: MB brass replacement sight cover; left and right side smoke launchers. Below from left: detail of right-side smoke launcher; rear stowage bin; side stowage bin with the VP interior compartments installed.

so the finished tube assembly should be installed a little higher on the turret in order to clear the hull.

Empty ammo box holders are provided in the Verlinden set. Use these if the Tamiya ammo boxes (B77 and B78) are left off the turret. The Verlinden instructions show them installed vertically, but they should sit horizontally —like the kit parts.

The Stowage Bins and Smoke Launchers

There is so much work involved in detailing these two areas that they warrant a section all to themselves.

The Verlinden set contains brass and resin pieces for detailing the two stowage bins on the turret. The brass pieces represent the interiors of the bins and their tops, and the resin pieces represent the lids of the boxes.

I began by forming the interior tubs of the boxes. The Verlinden instructions are sketchy on how to assemble these, but I managed to figure out all but part number six, which I discarded. Both bin interiors required minor cutting to get the tubs to fit. I test fitted the box tops to make sure of the fit as I went. When the interiors were complete, I added the brass top pieces. After they dried I sanded all the edges flush. Obviously, if the bins are shown closed you can just skip all this.

Next, I added the MB hatch clasps to the tops of the lids. This took a while as there are thirteen which must be folded and attached. The results are pretty impressive. The lids were then attached, hinges facing the front of the bins.

I used the MB hinge assemblies (parts G1 through 5) for the rear bin. Again, these parts are very accurate to the real vehicle and come with the corresponding level of difficulty you might expect with parts this small. I gritted my teeth, and installed the four different multi-part hinges. Well, I'm not sorry I did it, it turned out to be one of the nicest parts of the model.

The side stowage box is attached by sitting the part on a small shelf, which emanates from the turret. This shelf is cleverly concealed when the bin is installed. This arrangement takes the stress off the mounting pins of the box. If I had to do it over again I would replace the mounting pins with thinner rod or sprue.

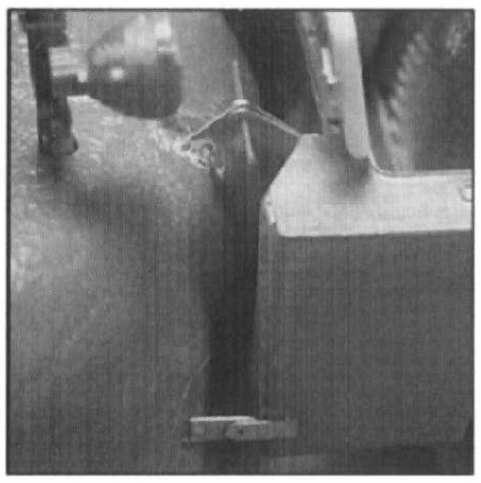
On the front of the Tamiya turret there should be electrical leads for the smoke launcher tubes. There are partial leads molded on, but they stop about halfway down on both sides. I added the additional sections from copper wire, using the box art as a reference.

The smoke launcher tubes are the most rudimentary part of the kit. The tubes themselves are O.K. but the mounting points are very basic. The MB brass set contains base plates for the launchers (parts B), which are simply circles with small tabs. The idea is to remove the bases of the kit's launchers and replace them with the brass ones.

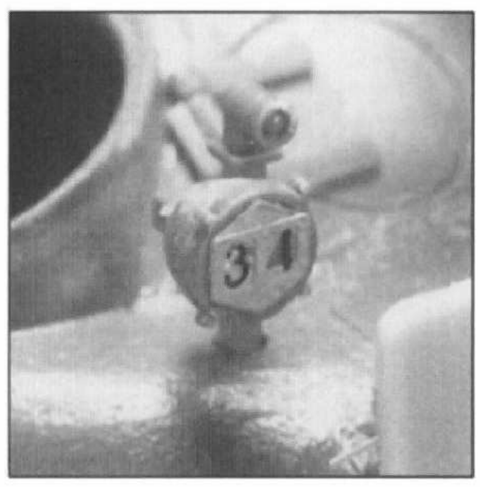
I began by trimming away the bases of each tube (use a sharp blade) and then I glued a new brass base to each one. I then bent over each tab and began positioning them against the turret. It was very tricky to position them, and it took me several attempts to get them all properly aligned. To their credit, the MB instructions give a thorough explanation of their installation. Again, I used the box art as a reference.

Support arms for the launchers are provided in the MB set, but I think you just don't need them. The spaces for them are so small they might not even be noticeable. It looks good even without the support arms, certainly better than what is provided in the kit. According to my references, each support arm gets progressively smaller as the launchers go

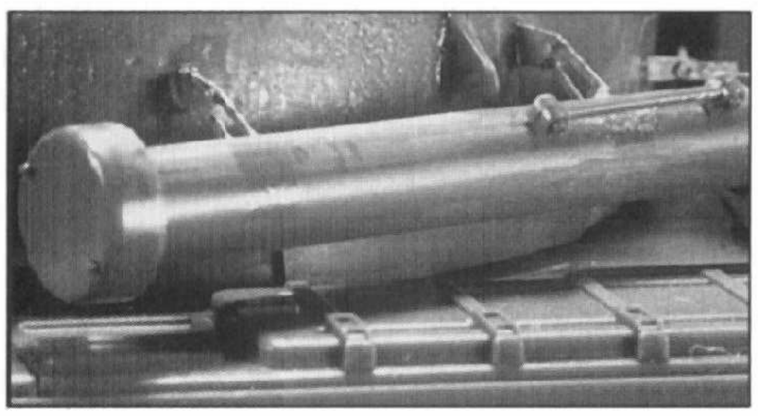
around the turret. In theory, one could cut down each arm for each launcher. Oh well, at least the option is available for those who wish to utilize it.



The upper and lower hinges provided in the MB kit.



The ID light panel on the back of the turret.



The completed and detailed snorkel assembly.

Conclusions

What's all this cost? Well starting from the top, the Tamiya T-72M1 as reviewed here was purchased for $47.95. This is extremely high compared to some of Tamiya's other earlier releases, but follows a trend started with their new Tiger I. This price increase is supposed to be remedied sometime in 1993 (as the rumor goes) as Tamiya brings its U.S. manufacturing facility on line. If you poke around, you can already find the kit at a discount. Battle Hobbies, which regularly advertises in the magazine *Fine Scale Modeler* was offering the kit for $37.75 in May of 1993. I found only minor problems overall; the tracks, smoke launcher bases and the dicey turret. Nothing that couldn't easily be remedied—even without the detail sets. If you build modern armor this kit is a must.

The MB set as reviewed was priced at $15.95. This is somewhat higher than previous sets offered by other U.S. manufacturers. However, the price compares very favorably to etched detail sets from Japan and Europe while the quality meets or exceeds them. I found the quality of the etching to be quite high, with all the parts well formed and the registration of each layer of detail very accurate. About half the parts improve the level of detail on a basic level, while the other half allow the modeler to take the detail to the show level.

The Verlinden set retails for $28.95 as reviewed. This is also a bit on the high side, but is generally consistent with their product line. Along with the price you get the now legendary casting quality of the resin parts and the aggressive attention to detail. However, the brass detail sets usually aren't etched as finely as other stand-alone products. I did elect to keep the engine off my model and this was a big part of the set.

The final tally on all this is $92.85, not including shipping or local tax. Its a lot, but as I said at the top, its still not as expensive as a high-tech kit from Japan. And, I think the level of detail in this project to be much higher. Prices on the "high-tech" items range from $110.00 to $185.00, with future releases hovering around $350.00!

Some folks might say its crazy to add all this detail to a model. But, there was a time when you would have to scratch-build all that detail. Now, manufacturers make it available to everyone.

Two views of the brass brackets installed on the commander's searchlight.

MMiR RECCE

Tamiya T-72M1. Kit number 35160. Purchased from Squadron mail order: 1115 Crowley Drive, Carrollton, Texas 75011. Price was $47.95, no sales tax, $3.75 shipping charge. Payment by credit card (via fax: 214-242-3775), delivery time was approximately two weeks.

MB Models T-72M1 detail set. Kit number 2001. Purchased from MB Models, Inc. 7325A Cross County Road, Cross County Plaza, Charleston, South Carolina, 29418. Price was $15.95, no sales tax, $1.00 shipping charge. Payment by credit card (via fax: 803-552-0857), delivery time was approximately one week.

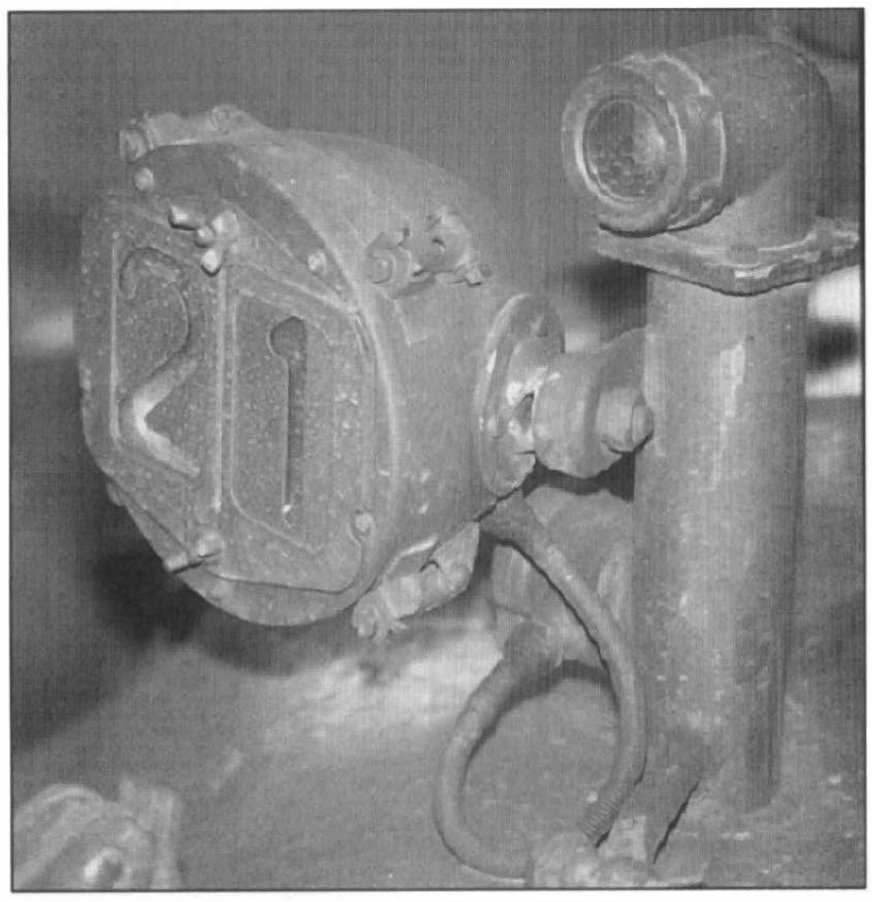
Verlinden T-72M1 detail set. Kit number 781. Purchased from VLS Mail Order, 811 Lone Star Drive, O'Fallon, Missouri 63366. Price was $28.95, no sales tax, $3.50 shipping charge. Payment by credit card (via fax: 314-281-5750), delivery time was approximately one week.

References

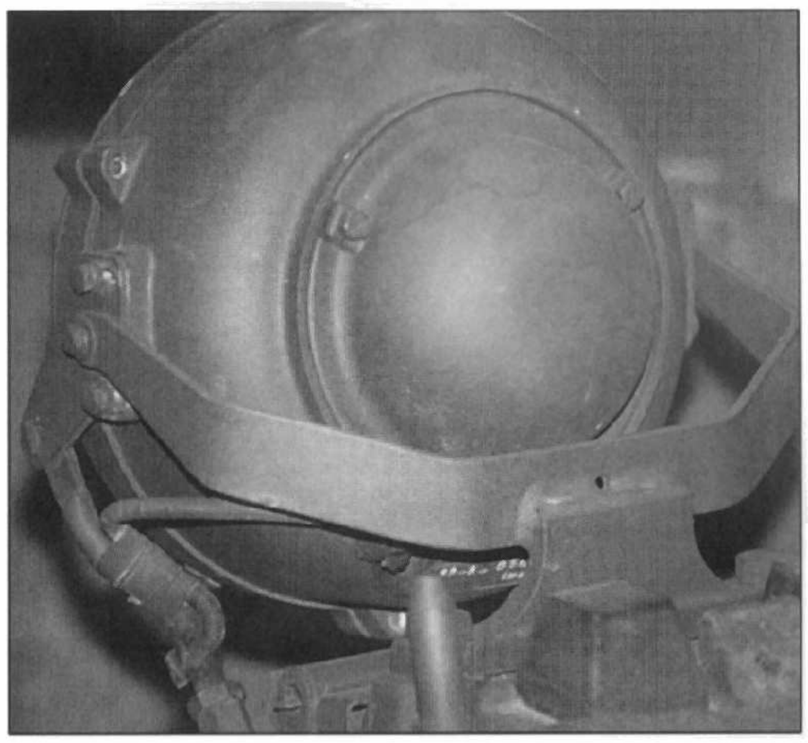
Tank Magazine special on the T-72. This book contains photos of all the T-72 variants and also contains detailed drawings. Honestly, I can't remember where I got my copy. Check any source for Tank magazine, also Colpar Hobbies in Aurora, Colorado (303-341-0414) has been known to stock them in the past.

T-72 Battlegroup. Grenadier Publishing. This publication contains many close-up photos of the T-72M1 with the emphasis being on vehicles in Iraqi service. My copy was purchased from Squadron mail order (address above) for about thirteen dollars.

⬅ The back deck buttoned up for deep wading. This Iraqi vehicle probably didn't do much wading of any kind!



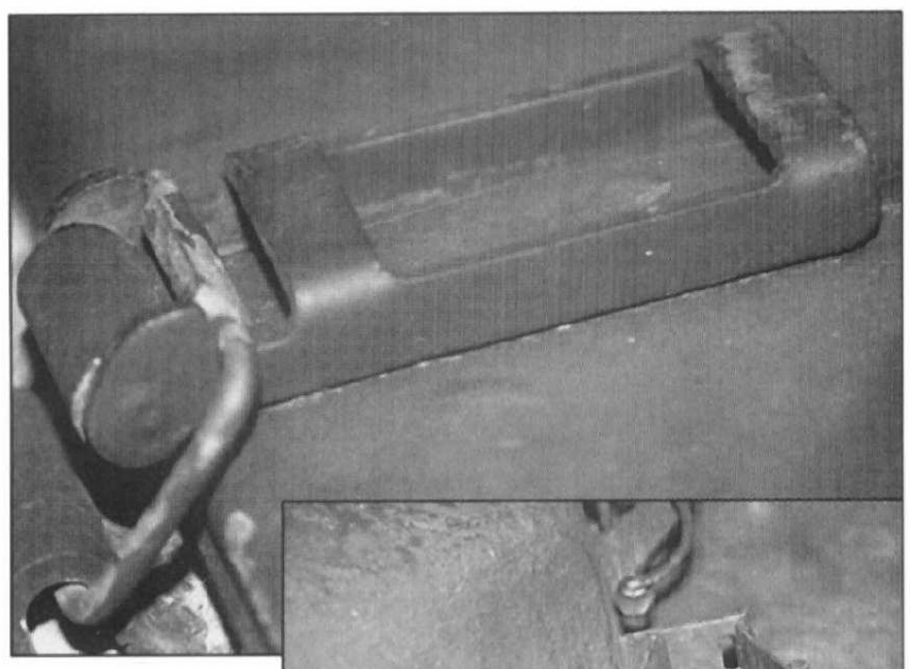
➡ The convoy ID light on the back of the turret.



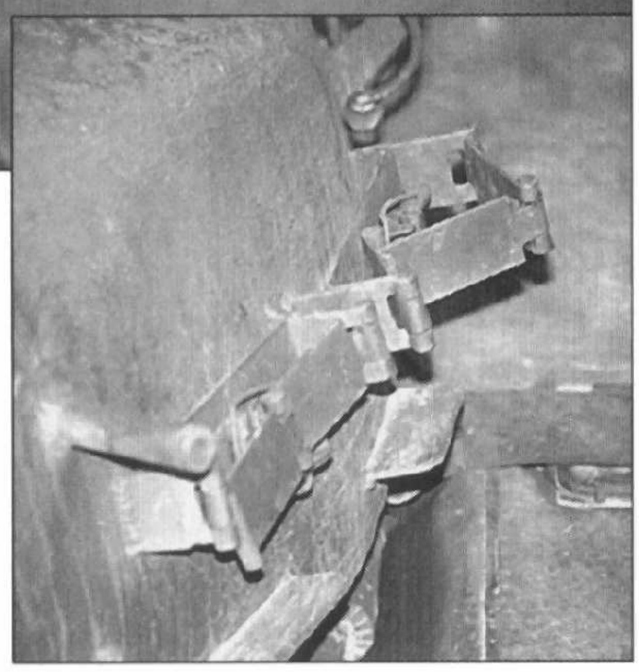
⬇ The bottom attachment points on the rear stowage bin.

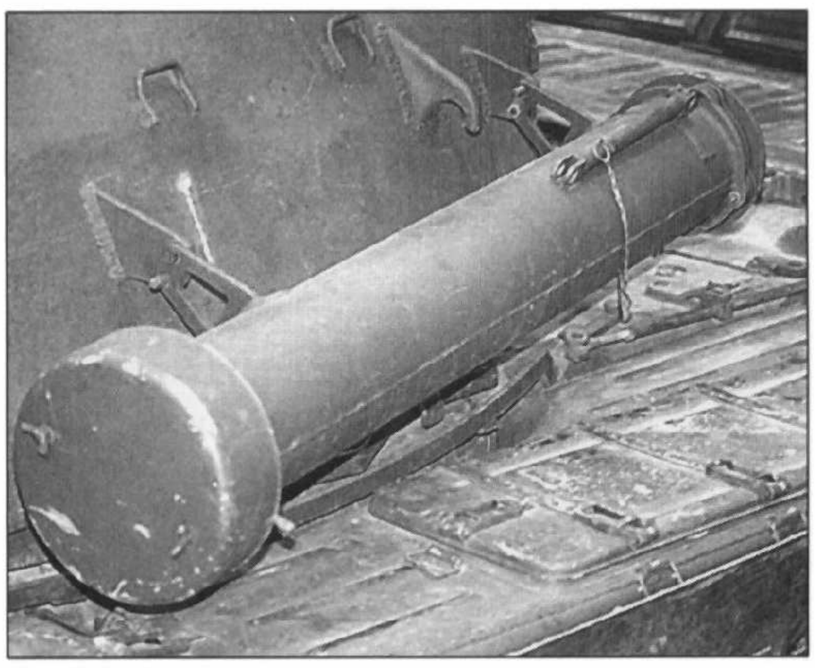
⬆ The back side of the commander's searchlight.

➡ The ubiquitous hull stowage clasp.

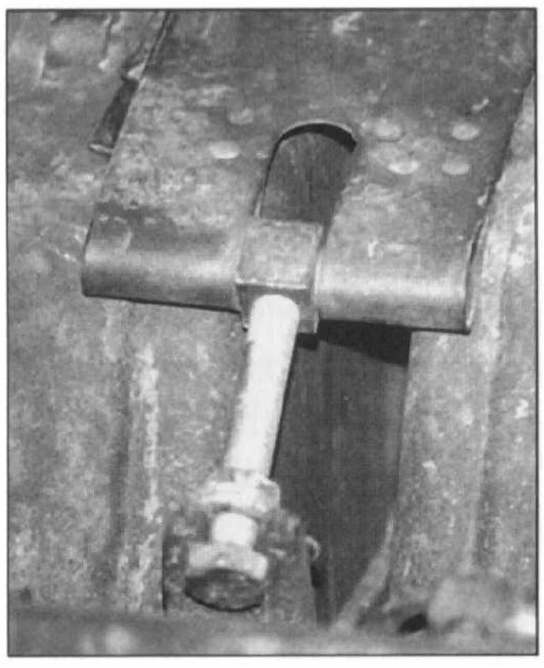


➡ Turret ammo box clasps.





⬆ The snorkel stowage tube.



⬆ Detail of a hull stowage strap.

➡ The main turret light's gun linkage.

⬅ Left side smoke launcher array. The main sight housing is just above.

Godzilla vs.

by PATRICK A. STANSELL

Its not too often that both DML and Tamiya release the same items. Or, at least it didn't used to be. I have a feeling that will change over time. Tamiya has recently released its version of the T-72M1, previously released by DML (see related article this issue). The competition is seemingly heating up between the two manufacturers. And guess what? The modeler is the winner, because we get a steady flow of new kits.

This particular dual release is an interesting one. The M1A1 is a very popular subject, especially after the Gulf Conflict. The M1A1 is DML's first release of the type (although I'm sure not the last) and Tamiya's is a re-tooling of its earlier M1.

Both kits are strictly out-of-the-box and are shown unpainted. What I'll do here give a separate review of each and then delve into the comparison of both kits. I start off with the DML kit.

The DML M1A1 with Mine Plough

Mine Plough? What is that, the British spelling? Just for the record, the U.S. Army designation of this piece of equipment is Mine Rake, or Mine Clearing Blade, not Mine-Plough or Mine-Plow. I'll be referring to it throughout both articles as Mine Rake.

The DML kit is packed in a large box with the customary box-art on top. First impressions are that the kit is big and elaborate. Seven (count 'em seven) sprues plus the upper and lower hull make up the kit. The kit is molded in DML's now familiar light gray plastic.

The large folded instruction sheet shows the sprue tree layout (which is nifty for locating parts), vehicle history, marking and camo info, cut-away drawing and step-by-step exploded drawings of the kit's assembly. I followed the kit's instructions pretty much straight through.

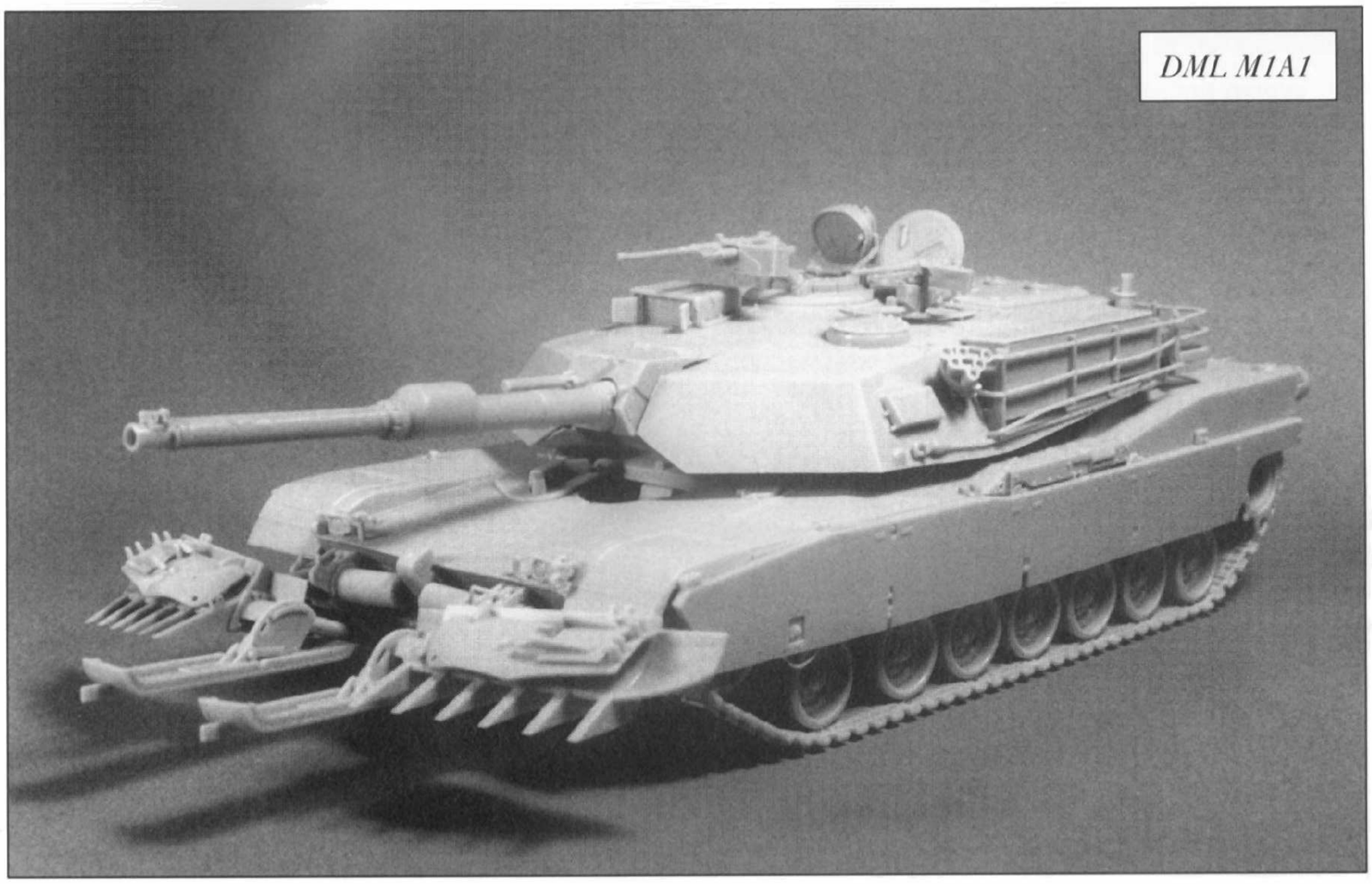
Step one covers the assembly of the rear hull. Here you have the option of installing the Auxiliary Power Unit on the rear hull. I added mine. I had a little trouble identifying the top and bottom of the unit, but I used Testors liquid glue throughout, so this leaves some time to correct stuff like this. The finished APU fits into large lugs on the right rear. When installed, the unit should sit flush against the rear hull and still be level. My example did not. I'm not sure what causes this.

The parts A21 are shown as being duplicates, but they actually are two separate parts. Parts C10, the rear light guards, have the correct cut-outs on the sides. Make sure to install each cut-out to the outside of the tank.

The DML kit comes with a rudimentary interior (the parts you can see from the hatches). Step two outlines the installation of the driver's compartment. The compartment is constructed as a drop-in module. The instrument faces and the driver's seat are represented. Painting information is provided (as it is for each step) for detailing out the compartment further.

Step two and three cover the installation of the bogie wheels. The wheels and sprockets are connected to their

Mothra or the DML and Tamiya M1A1 with mine rake reviewed



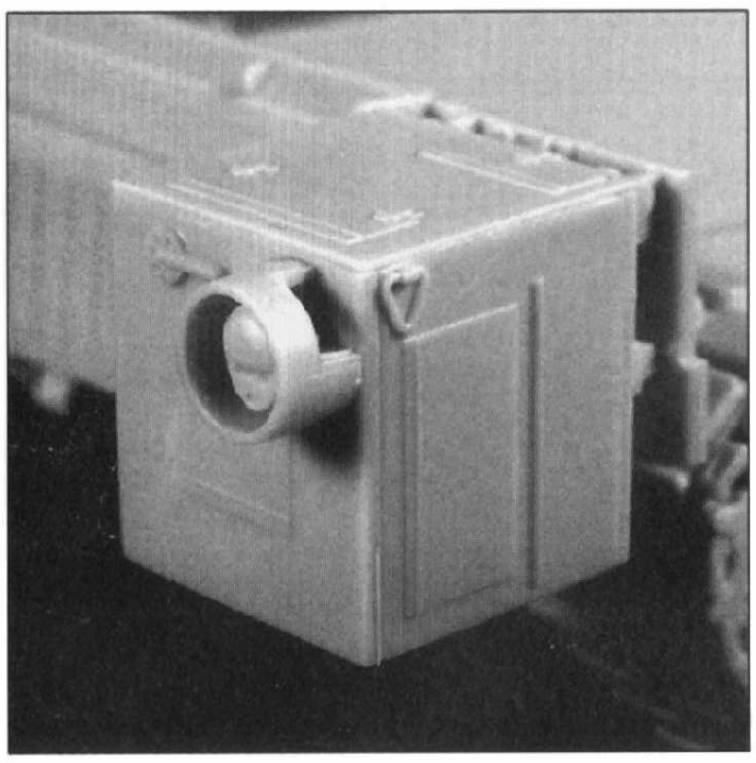
sprue trees with some pretty thick plastic, which results in some rather lengthy clean-up. Thick flash is a problem here also. The bogies fit well—they just click together. Installing them on the hull was just a matter of slipping them on their hubs. The bogies lacked a real positive fit however, which made it difficult to keep them all straight and level to the ground (or the table, in this case). The old style poly-cap centers probably would have prevented this.

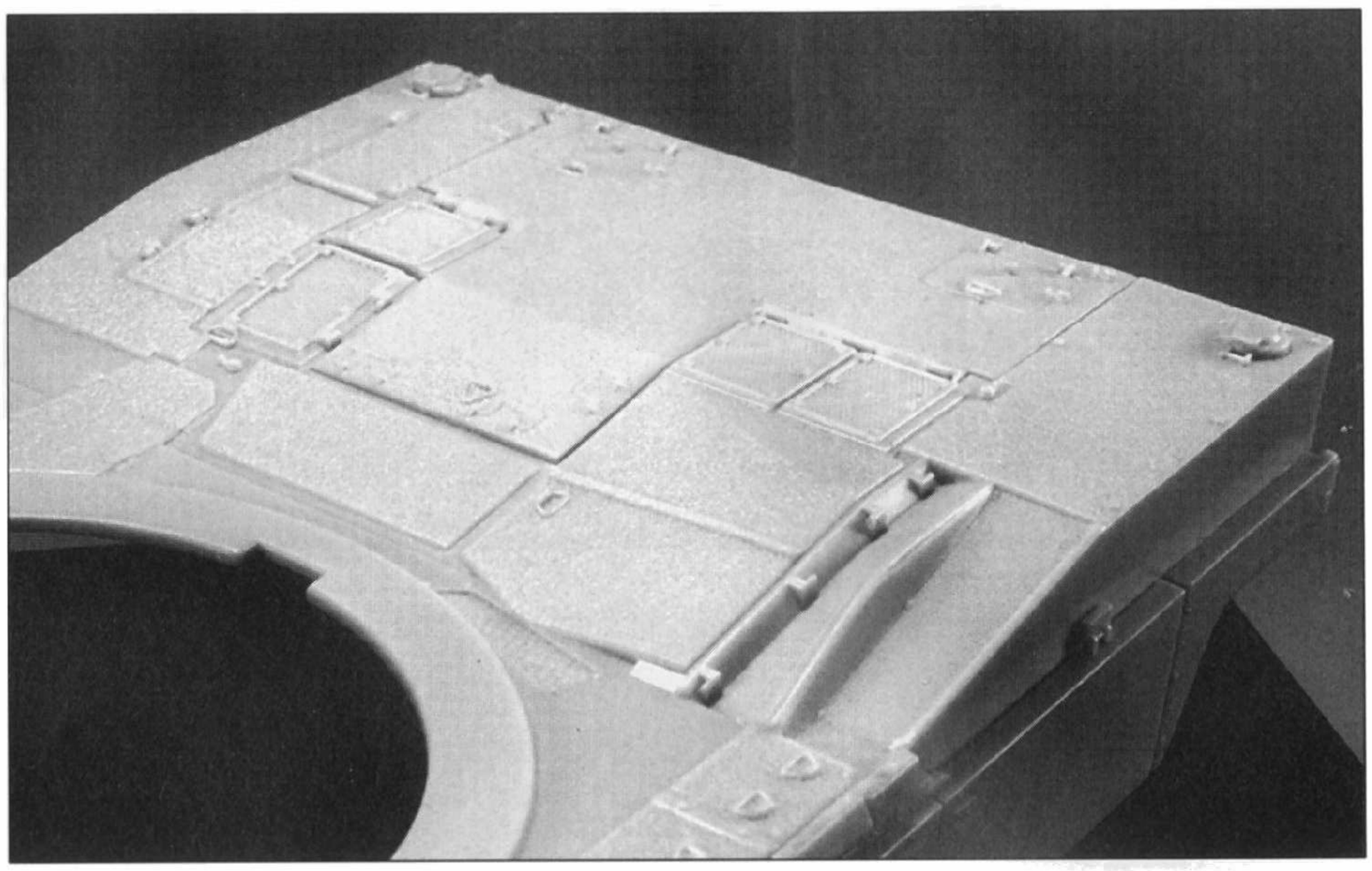
The tracks provided in the kit are the link-to-link type. The bane of modelers everywhere, you either love 'em or you hate 'em. I generally like these types of tracks, I think that if carefully assembled, they can really spice up a model. I wish I could lavish praise on these tracks. I will give DML big points for providing the big-block type tracks seen on newer M1s, but the praise stops there. These things are very tough to build. There's just no way to sugar-coat it, get ready to have a track-attack. The track parts are plagued with thick flash throughout. They have a tendency to push themselves apart after assembly. Again, I used the Testors liquid cement, which allows for some set-up time, and you will need it. There are long pieces for the top and bottom runs, and three and five link pieces for the sprocket and front bogie area.

I built the tracks in sections, one side at a time, letting each side set for about twelve hours. Because of all the trouble I had with assembly, I left off the top run as you don't see it anyway. The most difficult areas are around the sprocket and the front bogie. Because of the tricky fit, it wasn't easy to get that nice curving transition at these points. After much fiddling, I concluded that the center horn was the root of the fit problems. It appears that carefully trimming down the inside edges with improve the fit.

On to the top hull in Step four. The top of the hull has a very nice pebbled texture on the upper surfaces. This non-slip surface is common to all M1s. The engine hatch is provided as a separate piece. I guess this will accommodate some future release of an engine-pack from DML or their sister company, Kirin. [*this item is already available from Kirin—Ed]* The side skirts are three piece assemblies, with one piece being a side panel which can be displayed opened. Since the story of the tracks left me with no top track run, I opted to show each door in its closed position. These doors, when installed, are about one-sixteenth of an inch too big for their openings. I trimmed and sanded them to fit.

Steps five through nine cover the turret assembly. Step five describes the assembly of the turret's exterior subassemblies, like the commander's hatch and cupola, the main sight housing and the smoke grenade launchers. This works well because these assemblies can be set aside to dry while work continues on the turret. The commander's cupola for instance, contains periscopes and controls on the inside (which is cool) and these delicate parts should be allowed to set before further handling.





Above: the DML APU. Note the cutouts for the headlight guards. Right: the intricately detailed rear hull of the DML kit. The textured areas are visible around the hatches.

The majority of the turret interior parts install against two false interior walls, parts G1 and G2. I found that many of interior parts were difficult to locate, and their fit was poor. I suppose this isn't too critical because it all gets covered up. In the end, the fact that you can see accurate interior shapes through the hatch openings is what really counts. All interior areas are represented; the commander's station, with comm gear; the loader's position; the gun breech; the ammo bin doors; and all interior periscopes.

Assembly of the main turret gear basket presented many problems. All of the parts contain deep mold lines and thick expansion tabs. This is especially bad on the thin rail pieces, C14. F14 and F52 had such deep mold lines that it was necessary to remove most of the surface detail with them. I built in several stages, letting the parts dry before continuing. The same mold-seam and tab problem was evident on parts C13, C18 and C19, which are the rail pieces for the side stowage boxes. The fit here was just horrendous—not one of them fit! It might be a good idea to replace these with brass wire. The side boxes have the accurate non-slip texture on their lids (F42/F43).

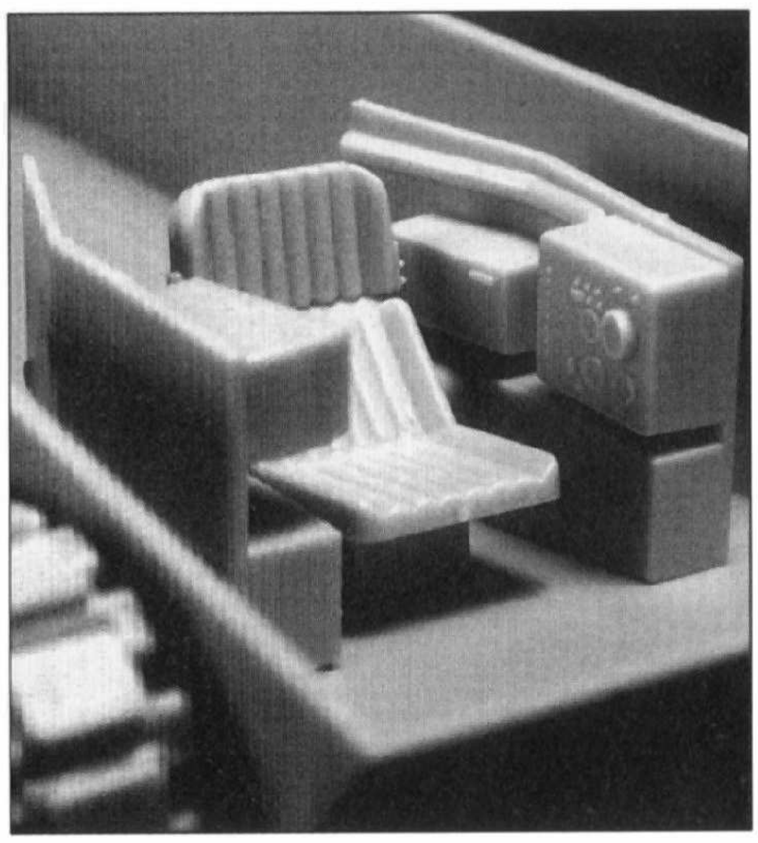
The remainder of the turret assembly went without much difficulty. The turret halves were buttoned up. The fit was good, but both halves were slightly warped. I gradually worked along the seam with super glue to seal them. There were some noticeable gaps around the mantlet. After the turret had dried, the sub-assemblies were added along with the rest of the turret detail. The main sight doors can be displayed opened or closed, and the wind sensor on the turret rear can be shown in either the raised or stowed position. The panels which fit over the ammunition compartment are separate pieces (F20).

I have heard that the actual M1A1 has two lift-out ammo units which can be replenished with great speed in the field. The empty units are lifted out and new ones dropped in. The empties are then recycled, being refilled with rounds at the rear and brought forward again. The lifting lugs (C18) for these are supplied in the DML kit, although they are not mentioned in the instructions.

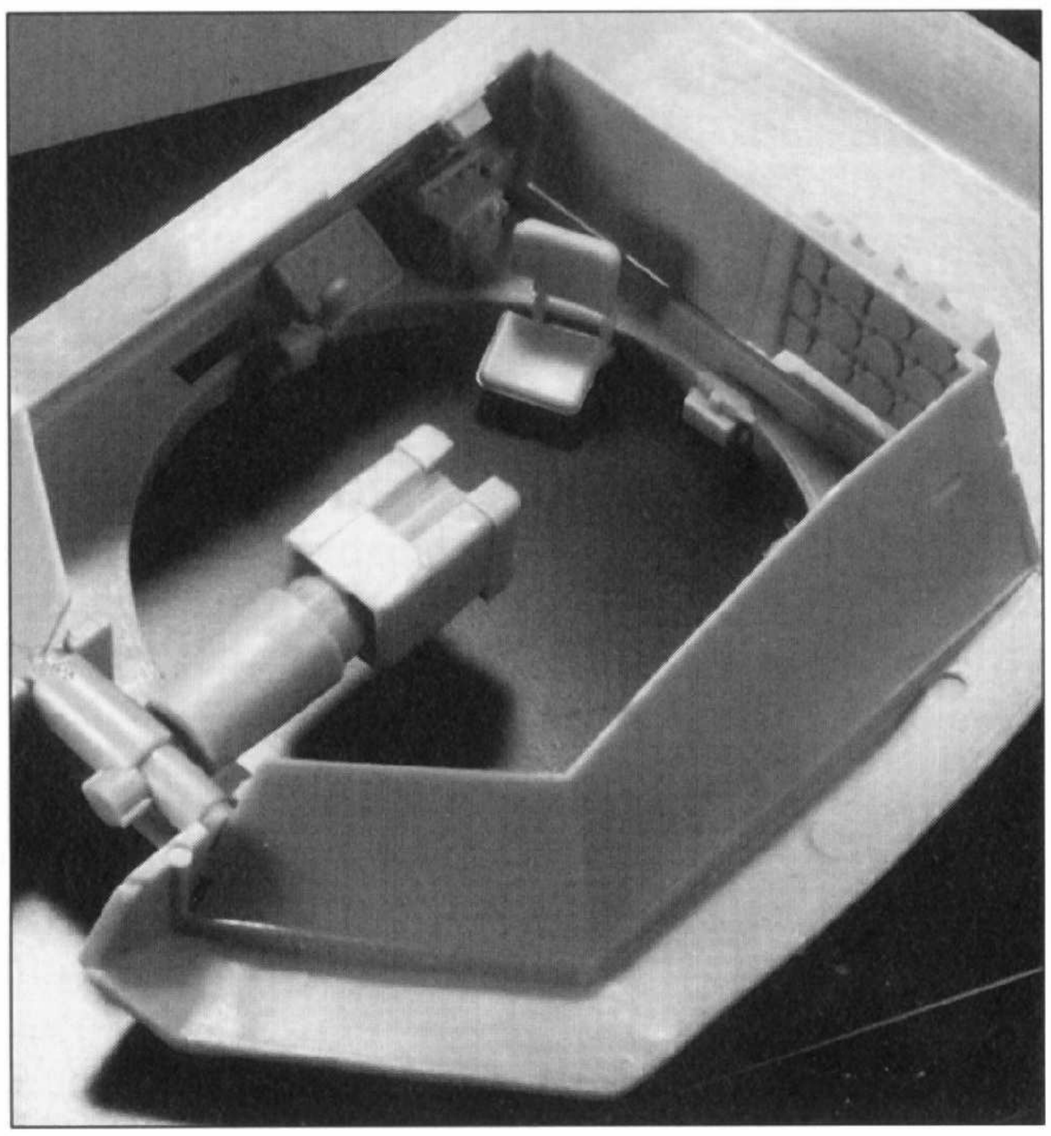
I deviated from the instructions slightly, and added the two turret machine guns at this point just to complete the turret. Both assembled neatly and looked accurate when complete.

The Mine Rake

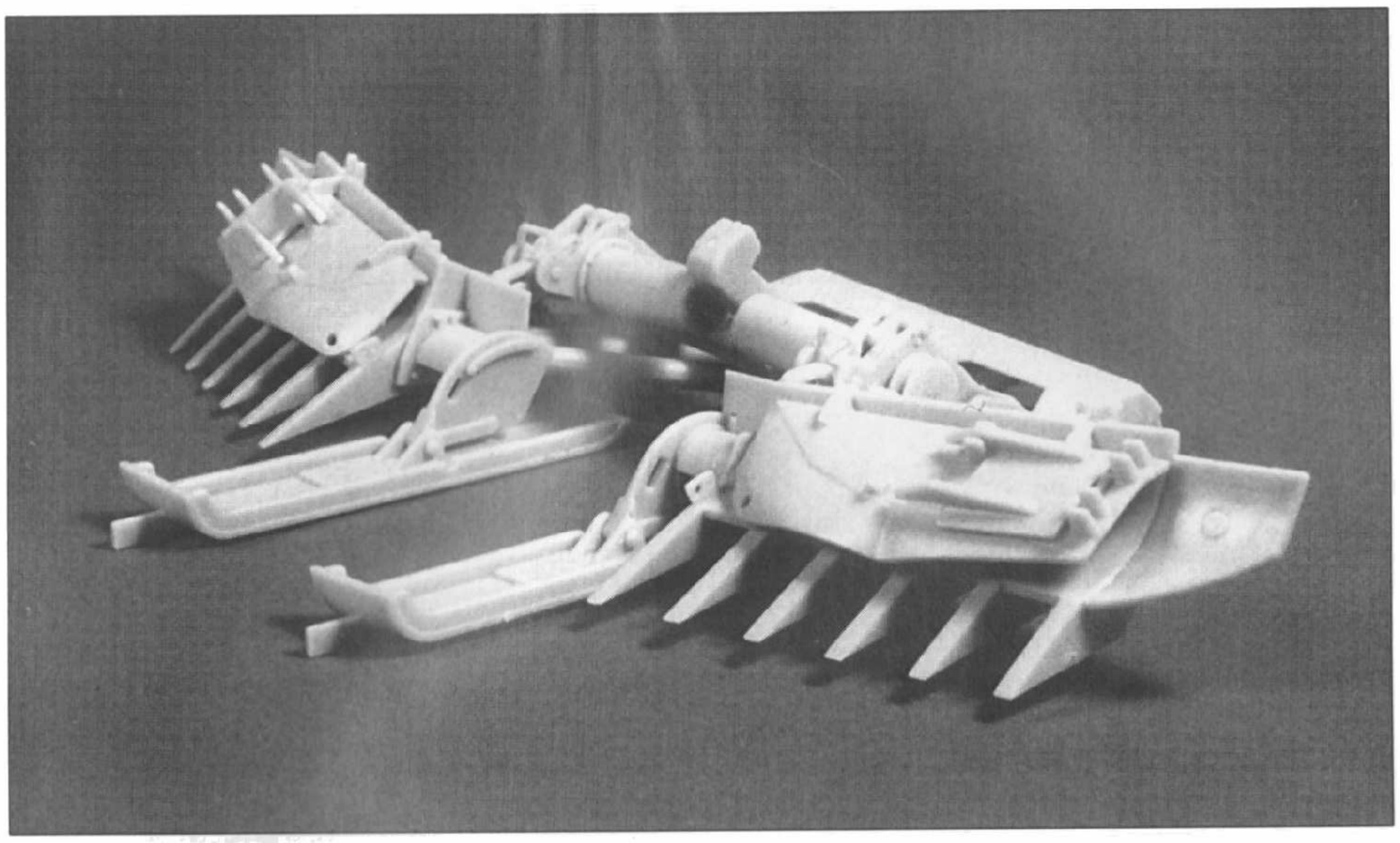
The DML mine rake is a complex model all in itself. Care should be taken

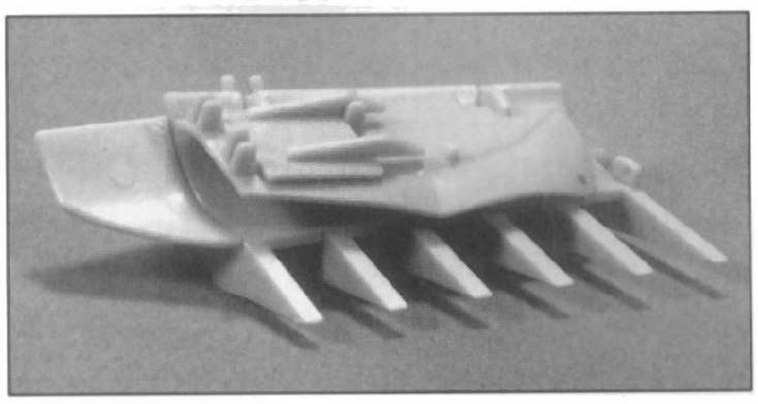


Above: the DML driver's module.



The DML turret interior.





Top: completed DML mine blade assembly. Above: the right side blade. Right: close-up of the actuating arms on the DML rake (left side of the vehicle).

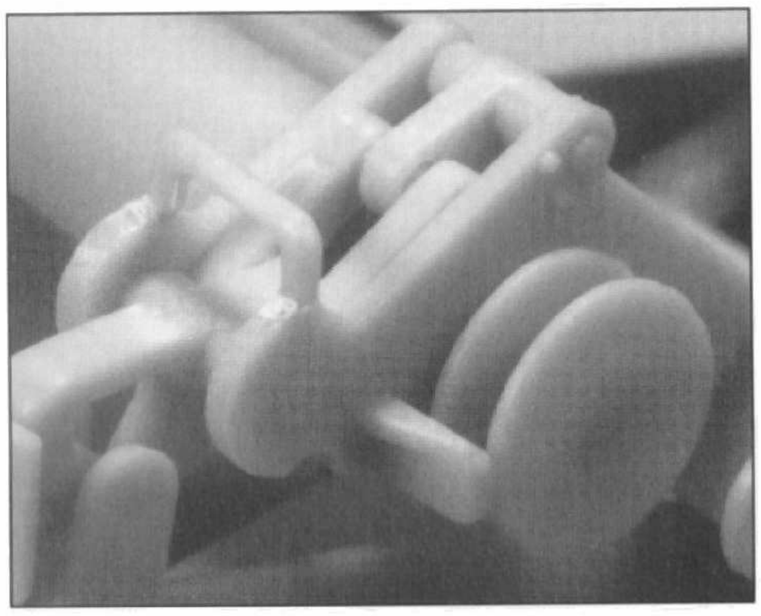
throughout the assembly, as the part identification is a little sketchy. The rake itself is composed of two identical rakes which are mirror images of each other. So determining which part goes to which side is critical. On all of the small parts I used super glue, with a fine tip attached to the bottle.

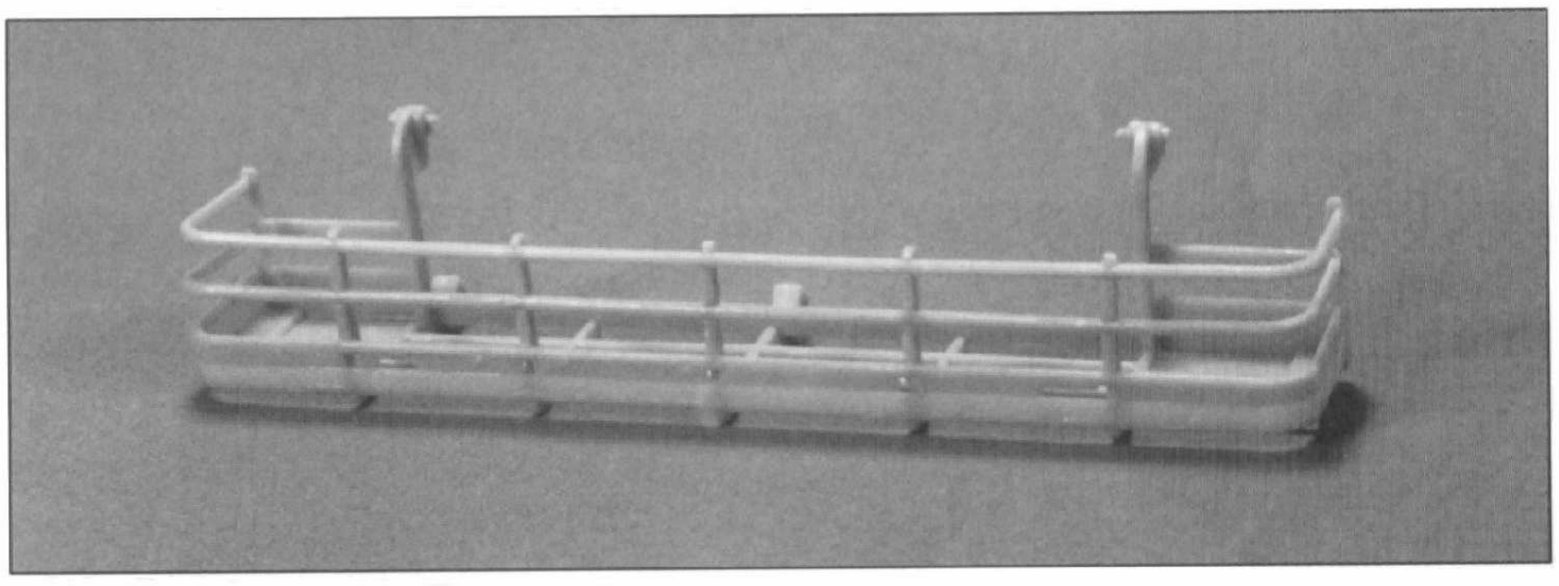
You have the option of installing the rakes in their opened or closed position. I opted for closed. Virtually all the other parts are meant to be movable. This is quite a trick, as the glue points are not isolated enough to prevent adhesive from bonding to the movable parts. This is particularly evident in Step thirteen. This is the actuating hinge for each rake blade. Correct assembly should enable you to raise and lower each rake blade and its corresponding skid. I'm afraid I wasn't quite able to pull it off. This could give you fits if you are trying to show the rake assembly flat on the ground, as the whole thing never would sit quite level. I'd recommend showing it in the raised position, or plowing (ploughing?) through the ground.

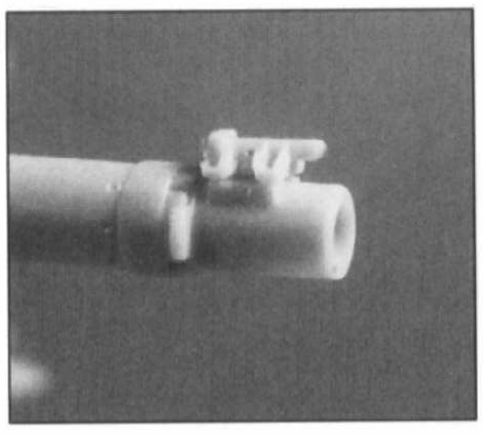
Another difficulty with the rake unit is that all the parts again contain deep mold seams and flash. Knock-out points are also found in very conspicuous places. Some can only be hidden with putty.

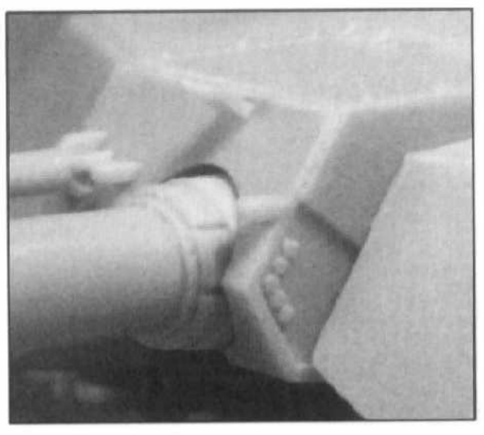
On real mine rakes, a large section of chain stretches between the two rake blades. From this hangs a large cast metal tube call a "dog-bone." This detonates any mines which are missed by the main blades. No chain was provided in my particular kit. I don't know if this was an oversight or not. The chain isn't specifically mentioned in the instructions. The dog-bone is provided however, with two plastic halves making up the part (E27).

At this point, I began the final assembly by gluing the upper and lower hull together. The back of the hull fit just about perfect, but there were some gaps in the front hull. Installing the mine rake made them difficult to see. There were no specific attachment points for the mine rake, but I centered it on the hull using the box top as a reference. The finished rake unit doesn't fit around the front hull as it should. The

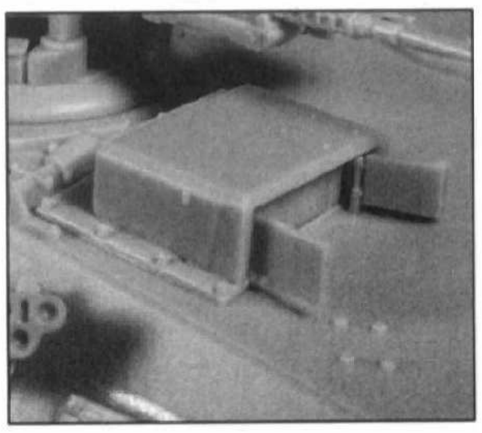


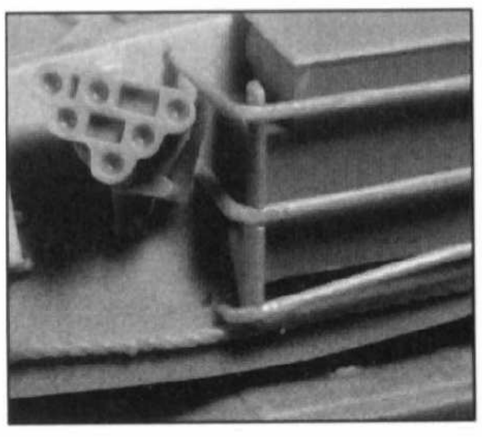




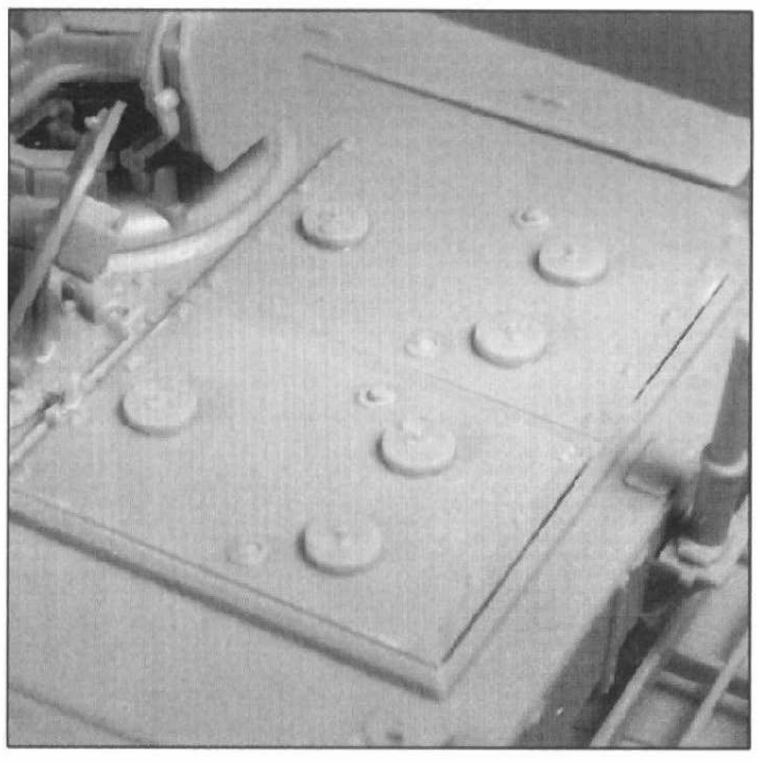


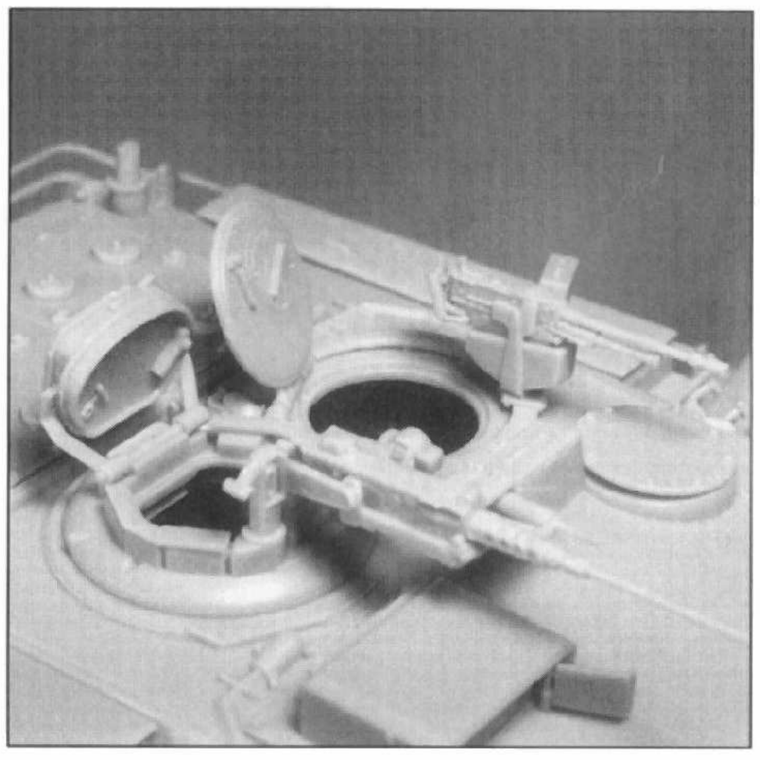
Above: (all DML items) the troublesome turret gear basket. The bottom of the basket should be covered in screen mesh.





Clockwise from upper left: gun barrel detail; gun base; main sight-port; smoke launcher and dicey side gear basket (left side of the vehicle).





Above left: the ammo bin blow-out covers on the DML kit. Note the lifting lugs. Right: turret hatches and turret machine guns on the DML kit.

two hinge assemblies should fit around the apex of the hull, not below it. Assembly was completed by dropping on the turret, which is the typical twist and lock type.

I'll summarize my conclusions of this kit at the end of the article, so for now read on...

The Tamiya M1A1 Abrams with Mine Plow

Mine Plow, mine schlow. Well at least its spelled right. The Tamiya kit is packed in its familiar box with a large color illustration. Inside, seven sprues molded in tan plastic make up the kit, along with a section of black mesh, some fine copper wire, a piece of vinyl tubing, a sheet of clear parts, copper chain, a turned brass "dog-bone," a sprue of poly-caps, and a decal sheet. Like the DML kit, first impressions are; its big!

The kit appears to be a re-tool of Tamiya's earlier M1 kit. The only parts which remain untouched are the upper and lower hull. Most of sprues contain the 1992 mark.

The instructions take the form of a small booklet. This appears to be a trend with Tamiya lately. The assembly sequences are shown with exploded drawings. Each assembly step is explained in English, French, German and Japanese. The last three pages of the booklet cover painting and detailing information.

Liquid glue was used throughout the assembly, and super glue was used for some of the smaller parts.

Step one and two of the suggested assembly sequence pertains to the mine rake base. All the parts fit together well with minimal flash. The rake base builds into a very sturdy and robust sub-assembly. The finished piece really speaks well of Tamiya's long years of experience in engineering plastic kits.

Step three skips forward to the bogie assembly. This is all pretty straight-forward stuff. The contact points on the wheel sprues were small and mold seam clean-up was minimal. This is always a relief when you have thirty-two wheels to tidy up. Each bogie gets a poly-cap type insert. This is also true for the drive sprocket. Be careful, as two of the caps are found on a separate sprue. All the wheels engage the hull correctly. I installed them without glue, and all were perfectly straight and level after installation.

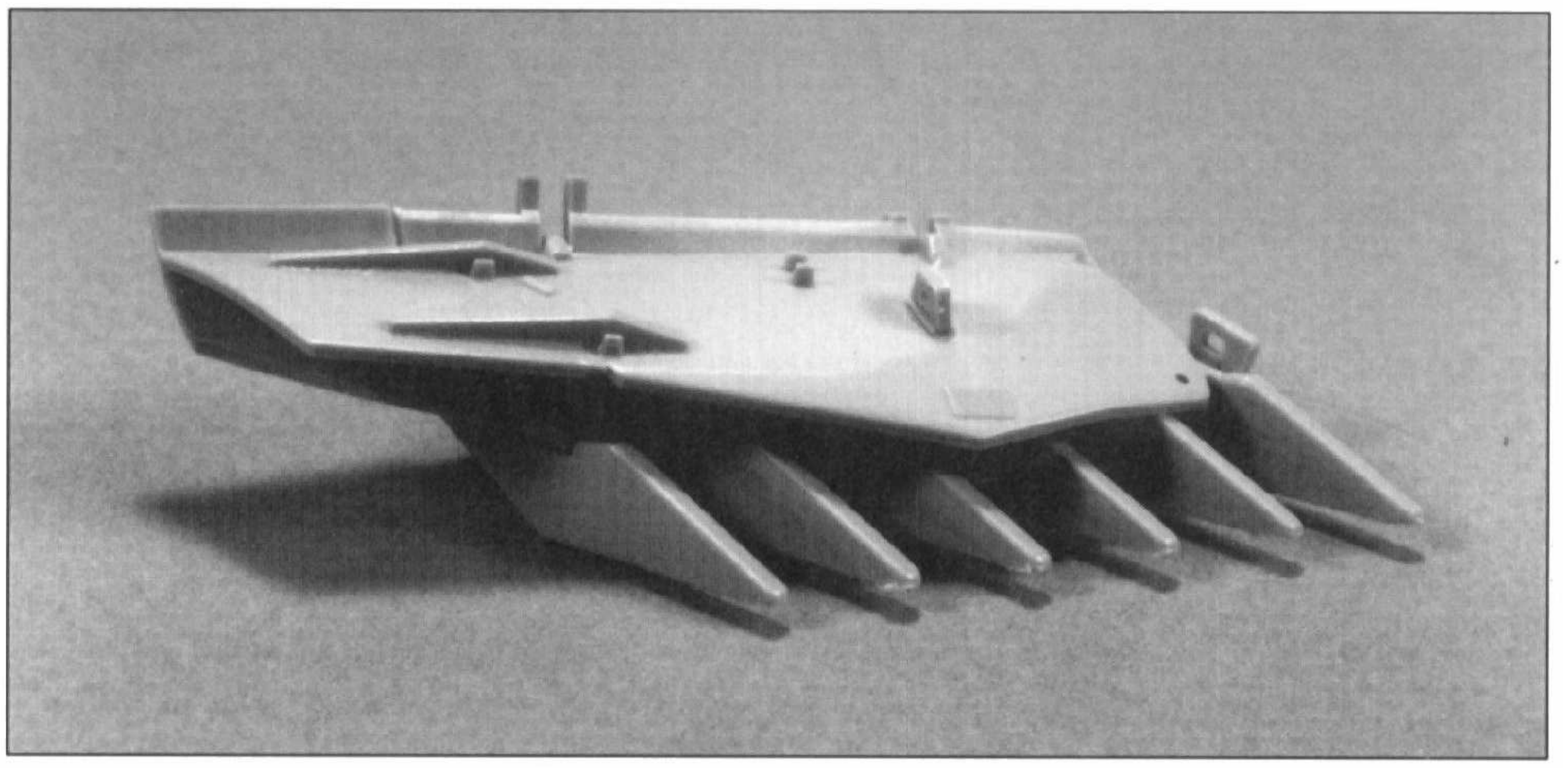
Parts are provided to cover up motorization holes in the lower hull. No electric motor is provided (darn!). This is probably a left over element of the earlier kits, when they were offered as kid's toys. I always found it curious that Tamiya would motorize any of its models. It seems that they would make really bad toys. A few minutes of aggressive play would turn them into so many injection molded bits. Anyway—long poly caps install in the lower hull to help engage the upper hull.

Step six covers the installation of the rear auxiliary power unit. The unit went together well and installed against the hull correctly. One nifty feature is that the part numbers are engraved on the backs of all the APU parts for easy identification. The light guard on the rear hull lack the proper cut-outs, so they should be cut in with a sharp x-acto or replaced with thick brass.

Step seven completes the detailing of the upper hull. The driver's hatch receives several of the clear plastic parts for the hatch's periscopes. These should be left off until after painting. I installed mine with white glue, which dries clear. One major draw-back of the Tamiya hull is that it lacks the non-skid surface. This is also true of the turret surfaces. On the good side, the hull and fender detail was well defined and crisp.

Step eight completes the hull assembly. The tracks are added at this point. I added mine here, but they should be left off for painting. I installed the side skirts here also. The hull can be left unglued until final finishing. Step nine calls for the installation of the mine rake base, but this should wait for final finishing as well.

Steps ten through thirteen continue with the rake blade assembly. The blades can be shown opened or closed, but since the rake can only be shown raised, I showed the blades closed. I did leave the side panels of each blade open (E14 &



The right hand blade of the Tamiya mine rake.

15) like on the box top. Assembly was pretty foolproof, with just some minor clean-up here and there. The instructions clearly illustrate the addition of the chain. Fine copper wire is provide to attach the chain to its various points on the rake blade and the lifting arms. The instructions also show (somewhat vaguely) the wire rigging across the top of the front hull. Part E18 (if you were wondering) is used on this rigging. Vinyl tubing is provided to represent the hydraulic line which snakes back through the driver's hatch. For super detailers, the hinges on parts E14, 15, 16, and 17 could have hinge pins added. The instructions recommend leaving the blades off until after the hull is joined and the rake base has been installed.

Step fourteen begins the turret construction. The gun trunion fastens with a steel bolt and a hex nut. This is kind of odd, but it works. Two small pedestals can be mounted in the turret to accommodate the crew figures. There is no interior provided. The turret halves fit well, but needed to be coaxed together with a couple of rubber bands overnight. There was a noticeable overhang just next to the gun which would need to filled.

After the turret was dry, the major sub-assemblies are added in Step fifteen. The side stowage boxes are numbered inside is easy identification. There is some fantastic engraved numbering detail on parts B68 and B66. These are the large braces found on the commander's cupola.

The gun halves went together easily. I used the old trick of flowing liquid glue into the seam and then squeezing the parts together. The resulting "squish" is quickly sanded away when dry.

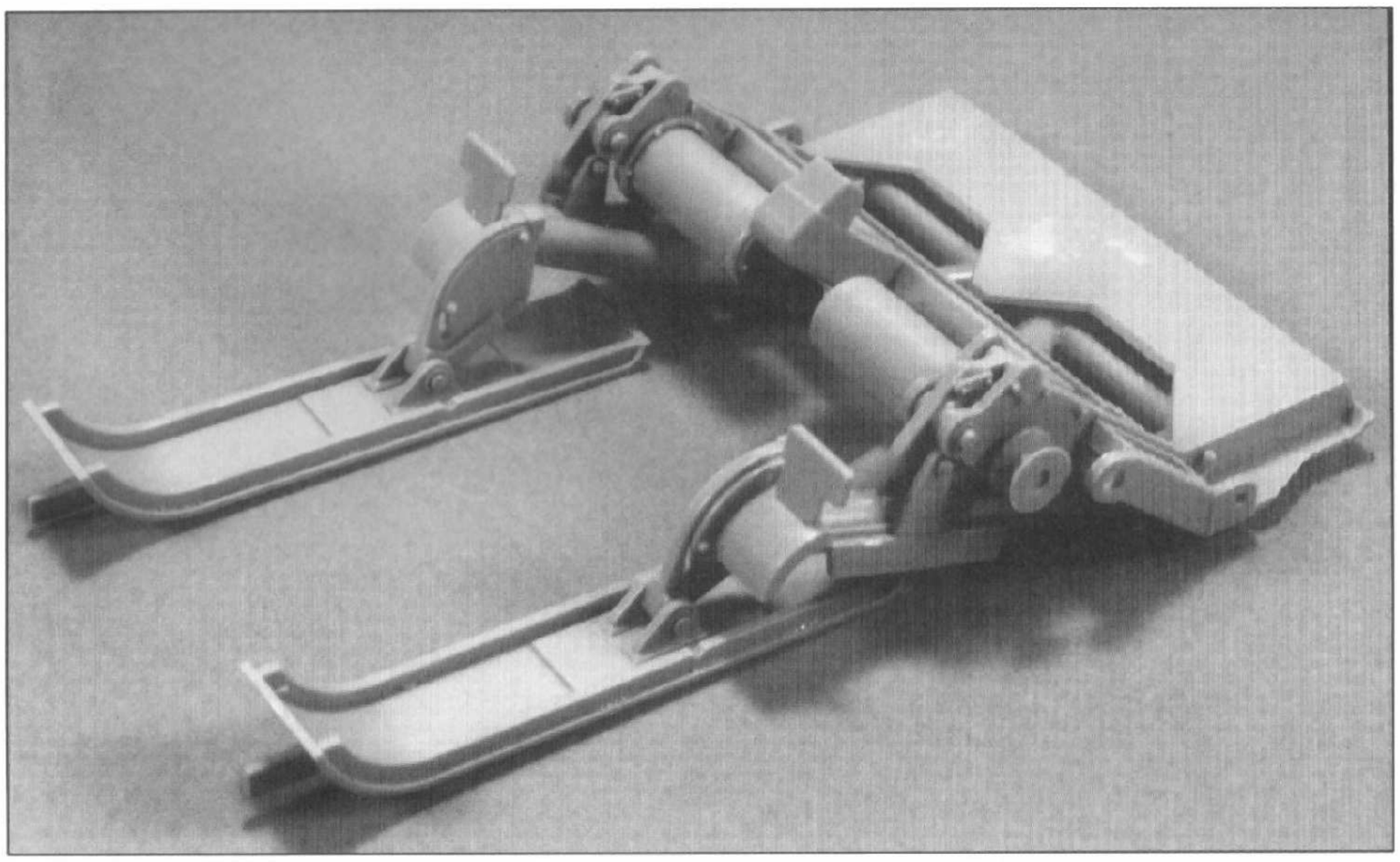
The balance of the turret detail is added in Steps sixteen through twenty. The doors on the main sight must be cut to show them in the open position. The doors lacked any detail. A clear plastic piece fits behind the sight window. The loader's hatch also gets a clear insert for its periscope. The smoke grenade launcher bases are somewhat simple and could stand some extra detailing.

The turret stowage baskets are simple and robust. The rear basket is molded in just four pieces and assembly is quite straight forward, with minimal flash and clean-up. Flexible black mesh is provided for the bottom, and is cut to the shape of a template provided. The mesh is square-patterned, rather than the diamond pattern seen on real M1's. Replacing with heavier gauge brass might be in order. The side baskets (parts D19 & D13) required a little clean-up to remove expansion tabs between the rails.

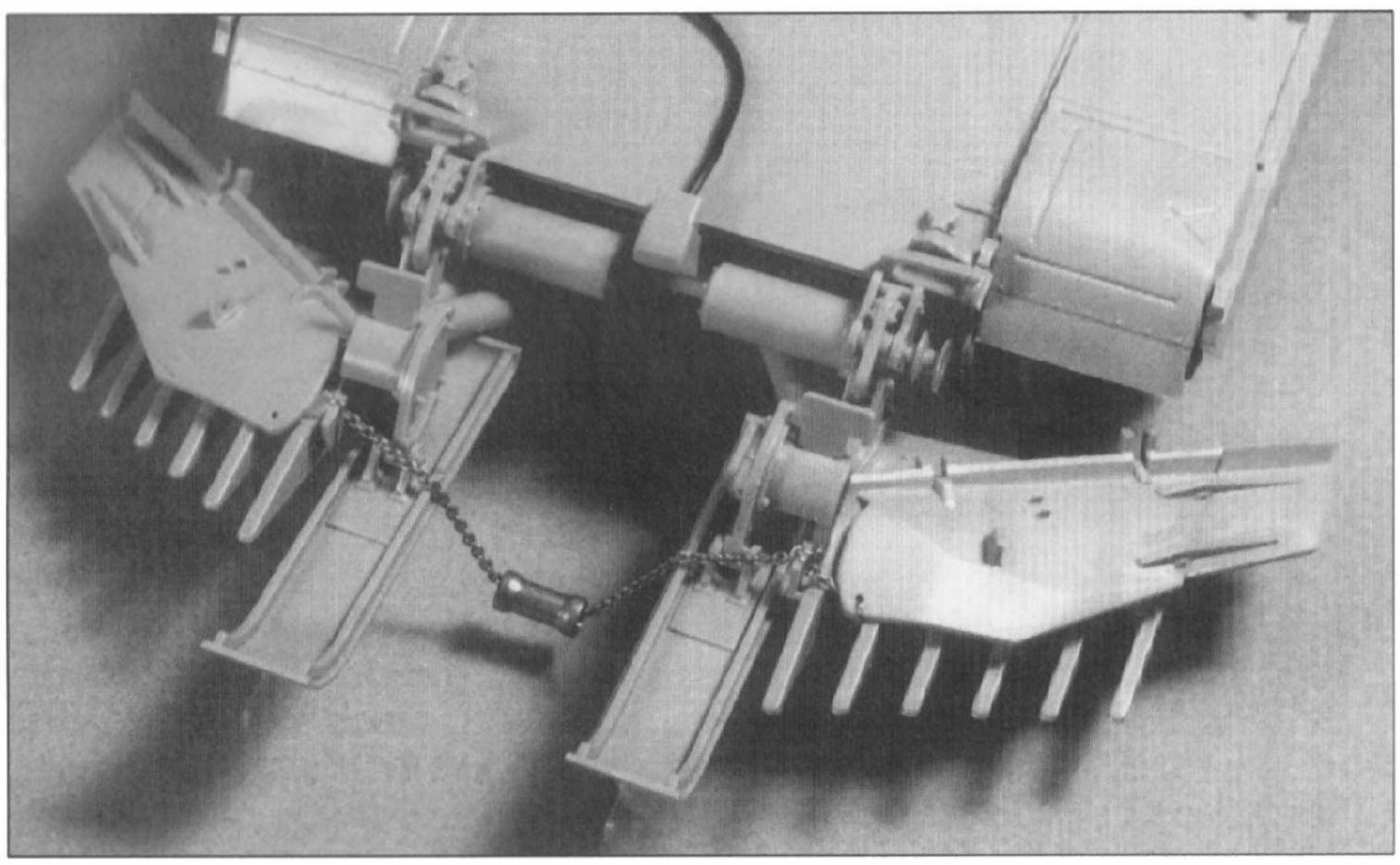
Turret construction was completed with the installation of the turret machine guns, which are nicely detailed; tow cables; and the rear wind sensor. The sensor installs only in its raised position. Four large ammo containers are provided along with two storage tubes and some smaller MG ammo boxes. I added the large boxes across the rear basket and the tubes and small boxes into the side baskets.

After joining the hull, the rake base was attached to the front hull and then the blades were attached.

Two neat little figures are included. Each comes with a set of goggles and holstered .45 which completes the standard tanker's shouldered firearm. I've noticed that Tamiya's figures are improving as of late and these are no exception.

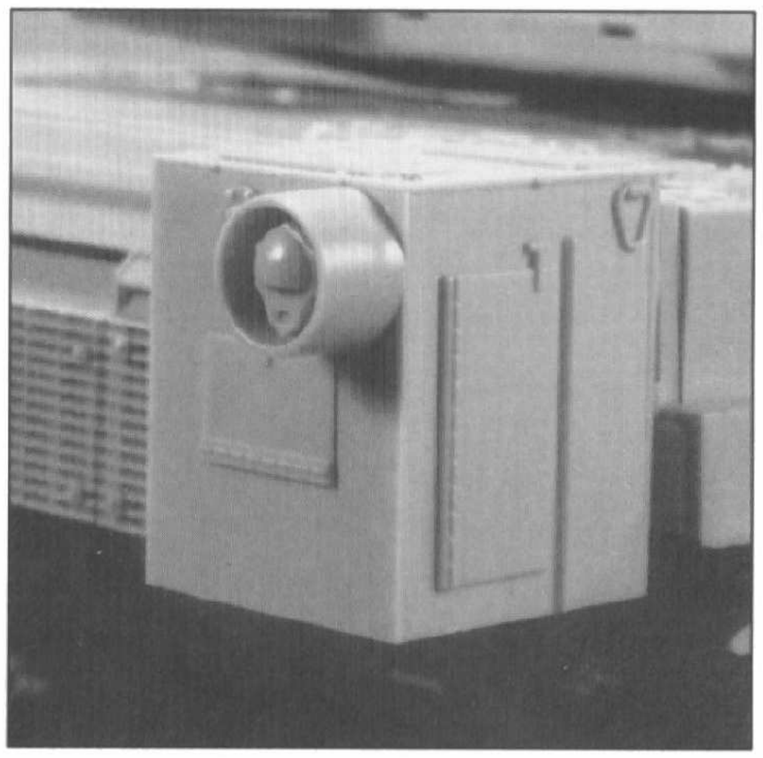


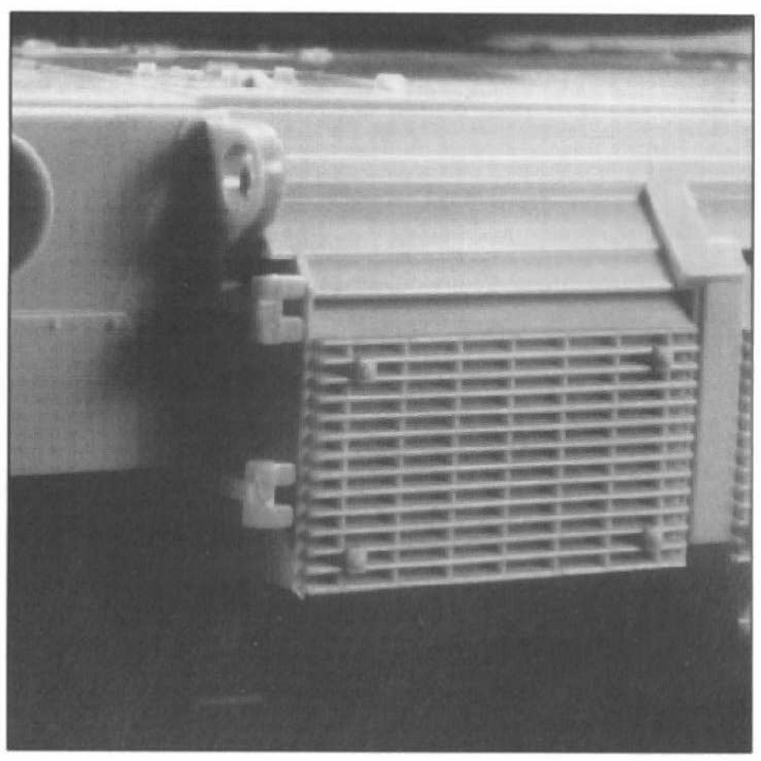
Two views of the Tamiya mine rake. Above: the completed rake base. Below: the finished rake installed on the vehicle. Only one of the chain pieces has been installed. Enough chain is provided for all 7 pieces. Note the turned brass "dog-bone".



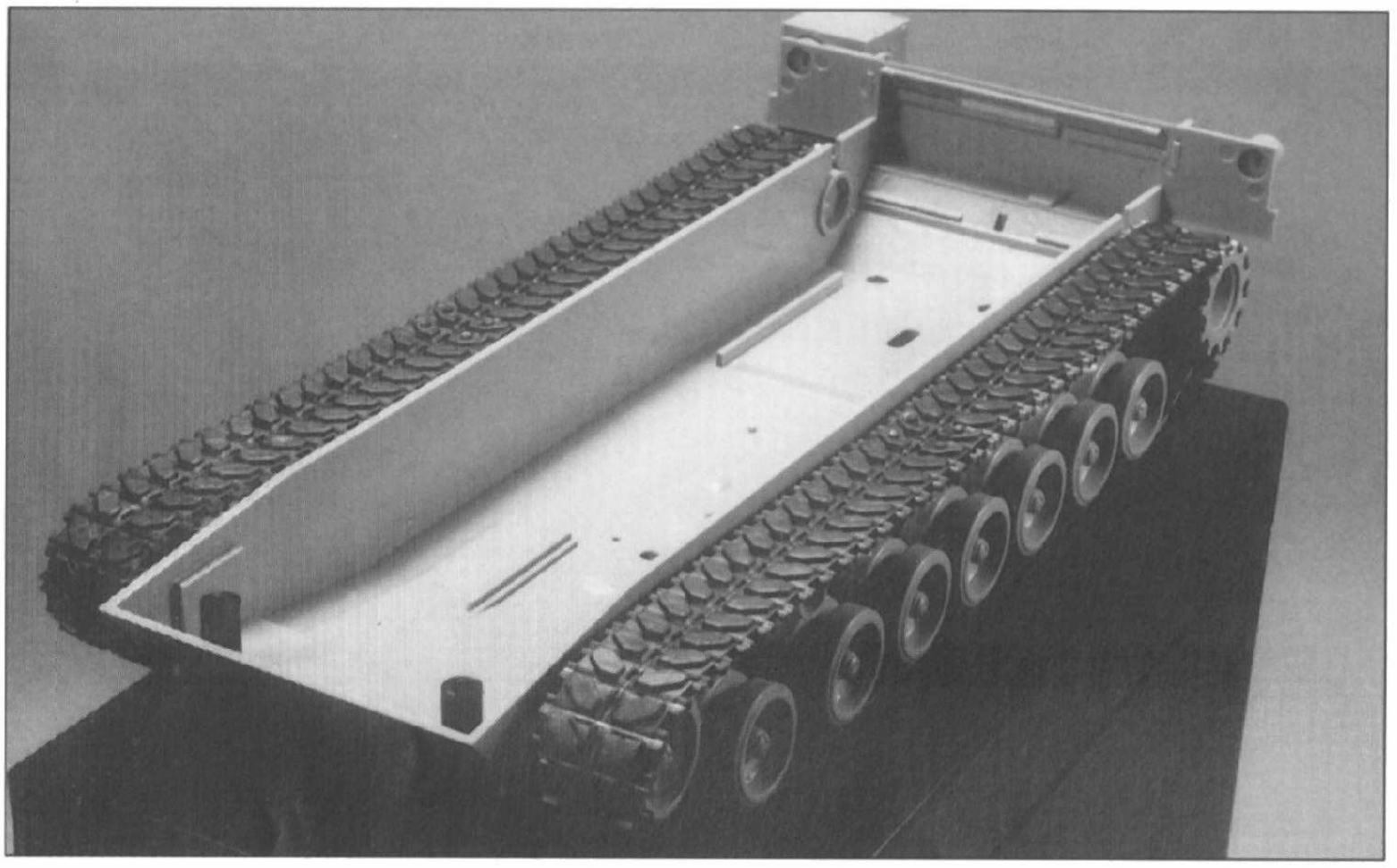
Conclusions

Well, this was quite a mission. The DML kit contained many unique and interesting features. Many of these seem squarely aimed at the enthusiast armor

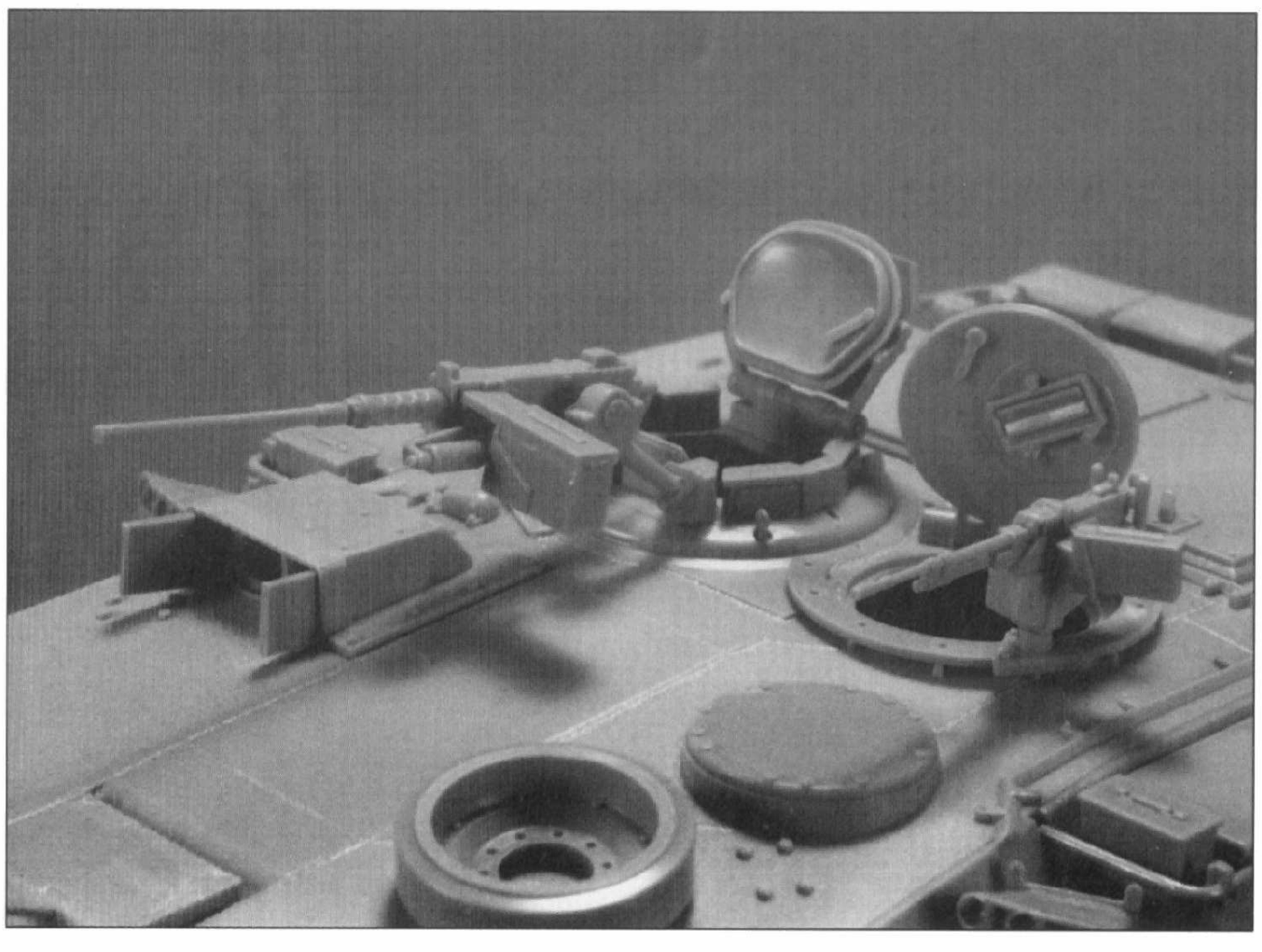




Above left: Tamiya's APU. Right: rear hull detail of the Tamiya kit.



Above: completed Tamiya hull prior to final assembly. The plugs for the motorization holes are evident on the right side of the hull. Below: finished Tamiya turret roof.



modeler. Big plus' were the pebbled texture on the hull and turret surfaces and the big-block tracks, as well as the interior parts. *[Editor's note—the big block type tracks came into service with the so-called M1 Heavy, which did not see service in time for Desert Storm]* My big problem here was not so much the intent of the model, but rather its execution. The intent, in my opinion, is to render some very nice and accurate details, but the overall engineering of the kit is plain old lacking. Part attachment points are at bad locations. Mold seam and flash are heavy and prevalent. Knock-out points and sink holes are also very common. The fit of most parts was poor. I have never had a kit fight back like this one. Its all very frustrating really, as much of the detail is accurate. All this does not necessarily mean that the model is bad—its just that you will work a lot harder to build and finish it. I spent much more time building the DML kit than the Tamiya one, in spite of the lack of an interior in the Tamiya kit—about one-third the time.

The mine rake suffers most in the DML kit. The finished rake assembly did not have the look or feel of the real unit. And the poor part design caused the rake to be flimsy and awkward. I spent about as much time building the mine rake as I did building the rest of the kit.

I'd suggest to modelers who have already built DML kits to stick to their versions of the M1 that do not contain the mine rake. Presently they have M1A1, M1 Heavy, and M1A2 versions. If you're a beginner modeler this will not be the kit for you.

The Tamiya kit is not the best kit they ever released but (I'm sorry) its worlds away from the DML version. Their many years of experience in the field shows in their kits. Contrasting the Tamiya and the DML kits only emphasizes that the parts are better molded, contain less mold seam and other imperfections. The design and engineering of parts make for easier and quicker assembly. I'd say that you would be better off fixing the minor drawbacks to the Tamiya kit than building the DML one. The non-slip surfaces can be applied with textured paint, or liquid glue sprinkled with very fine grain sand. The other small errors can be corrected with strip plastic and wire. You'll probably spend less time detailing and correcting the

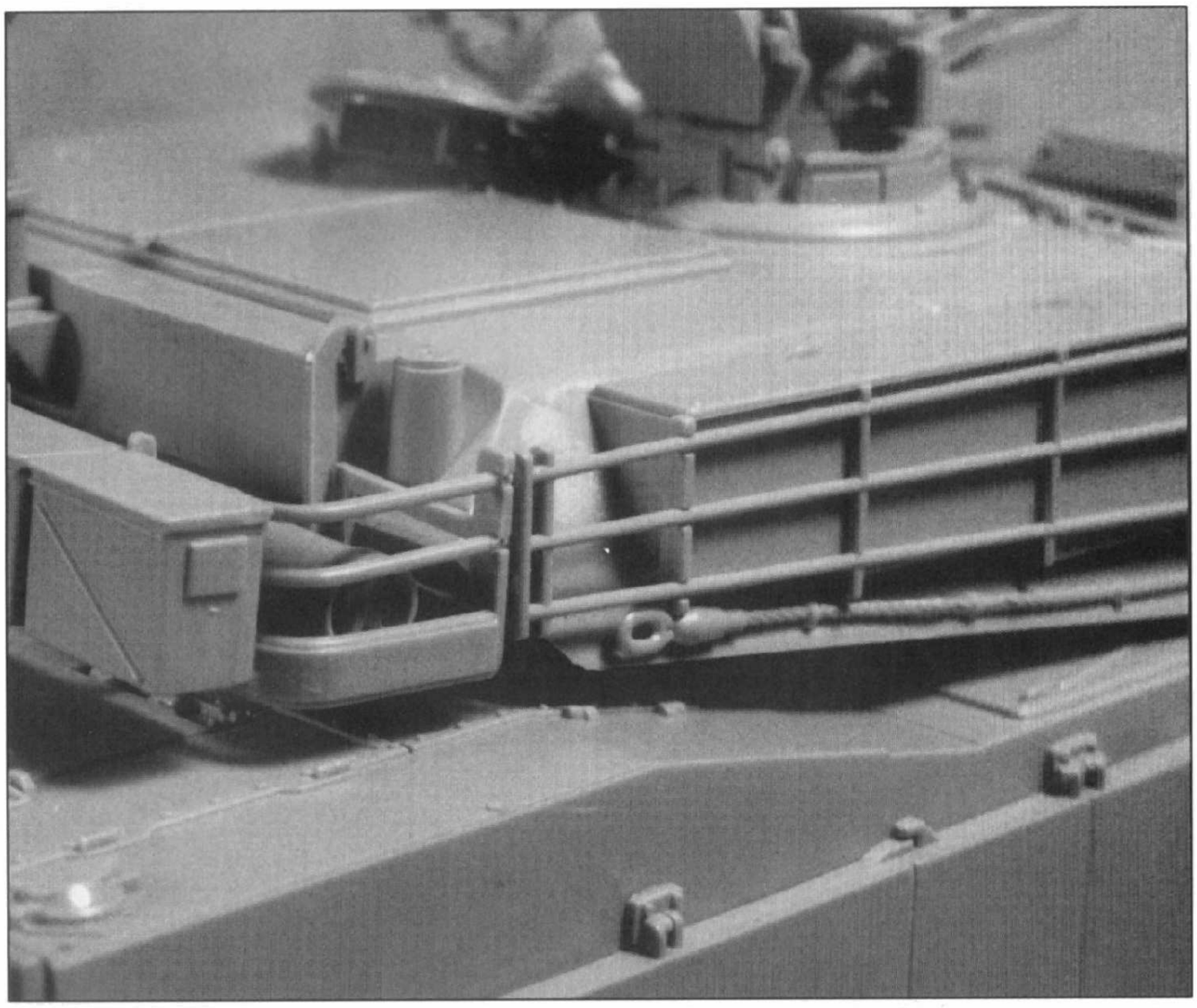
Tamiya kit than you would just building the DML one. If you've got the dough, the ultimate option would be to combine both kits. This could take advantage of some of the spiffy details of the DML kit (like the main exterior sight port and the gun barrel), and combine them with the solid engineering of the Tamiya kit. Opting for the DML kit by itself will save you some of that dough. The DML kit is priced at $29.95 retail. Although much higher than previous DML offerings, that compares favorably to the Tamiya kit which retails for $47.95. The Tamiya kit may come down in price in 1993 and can be found at a discount through some mail order outlets (check a current issue of *Fine Scale Modeler*), so that may negate any price point considerations.

Verlinden Productions makes a M1 update set which contains all the interior components of the DML kit, along with replacement side stowage rails and frames. Additional details are also included in this set, such as under-grill detail for the back deck. The set retails for about thirty dollars.

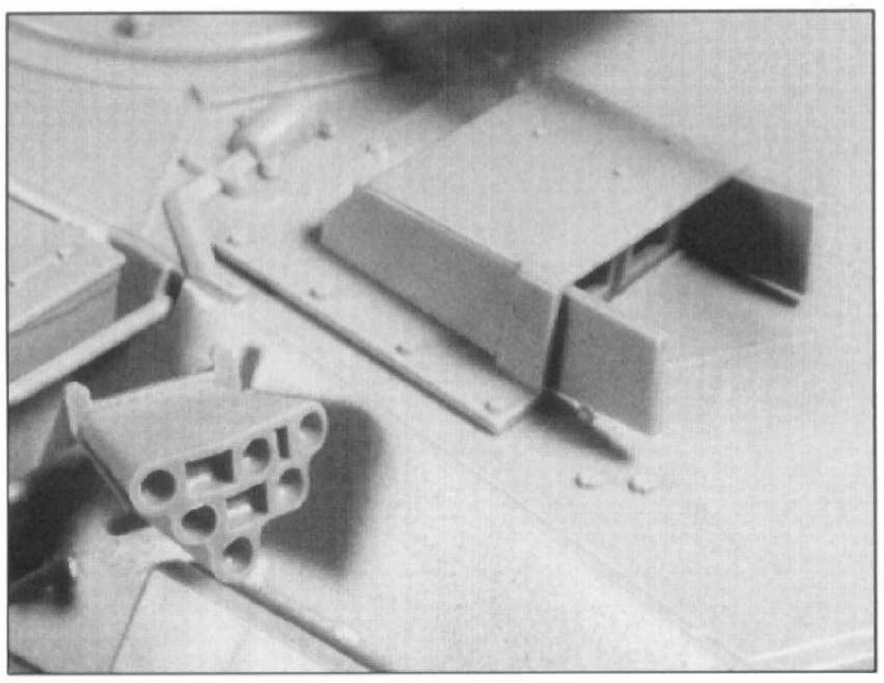
You could think of the DML's M1A1 as a challenge. A challenge that will save you twenty bucks!

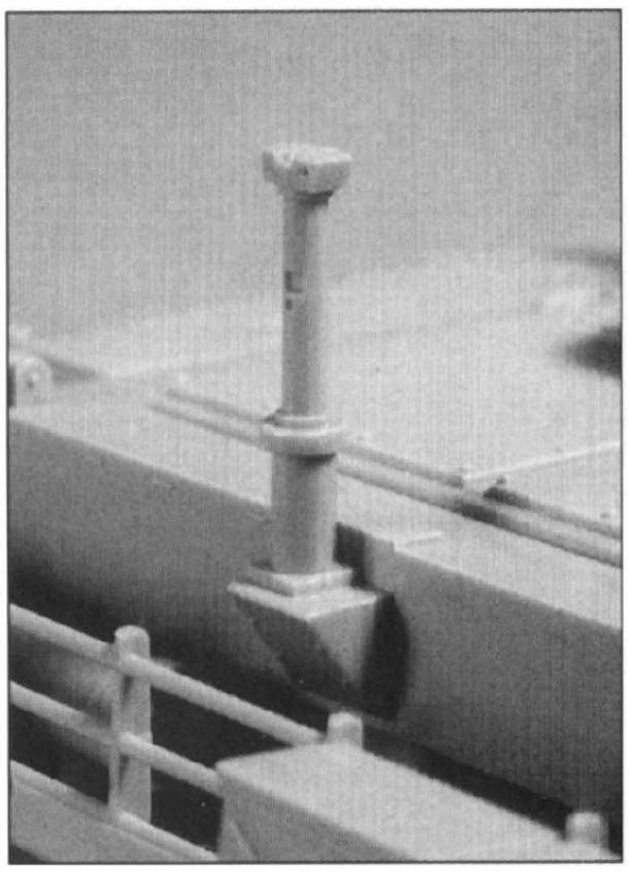
I'm really not trying to slam DML here (honest). I have tried to make some valid arguments both for and against the kit. In the end though, its up to you, the modeler, to decide.

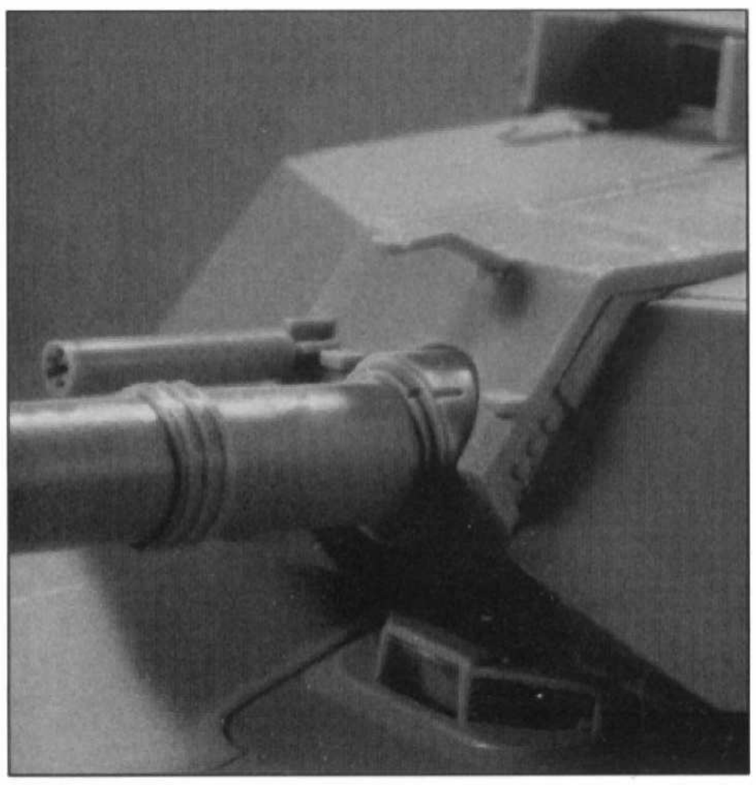
As Peter Jennings says "Its your money and your choice."



Top: the robust gear baskets of the Tamiya turret. Below left: the main sight and smoke launcher as seen from the right. Right: the wind sensor on the back of the Tamiya turret.







Above: gun base of the Tamiya kit.

MMiR RECCE

Tamiya M1A1 Abrams with Mine Plow. Kit number 35158. Purchased from Squadron mail order: 1115 Crowley Drive, Carrollton, Texas 75011. Price was $47.95, no sales tax, $3.75 shipping charge. Payment by credit card (via fax: 214-242-3775), delivery time was approximately two weeks.

DML M1A1 Abrams w/Mine Plough 'Desert Storm.' Kit number 3516. Purchased from Squadron mail order: 1115 Crowley Drive, Carrollton, Texas 75011. Price was $29.95, no sales tax, $3.75 shipping charge. Payment by credit card (via fax: 214-242-3775), delivery time was approximately two weeks.

References

M1 Abrams, History of the American Medium Tank by R.P. Hunnicut. Presido Press. It's big. It's bad. It's the definitive reference on the M1. This very thorough work traces the tank's development all the way back to the XM1 prototype. Don't leave home without it. I purchased mine from Squadron Shop mail order (address above) but it is available through most hobby shops and mail order outlets.

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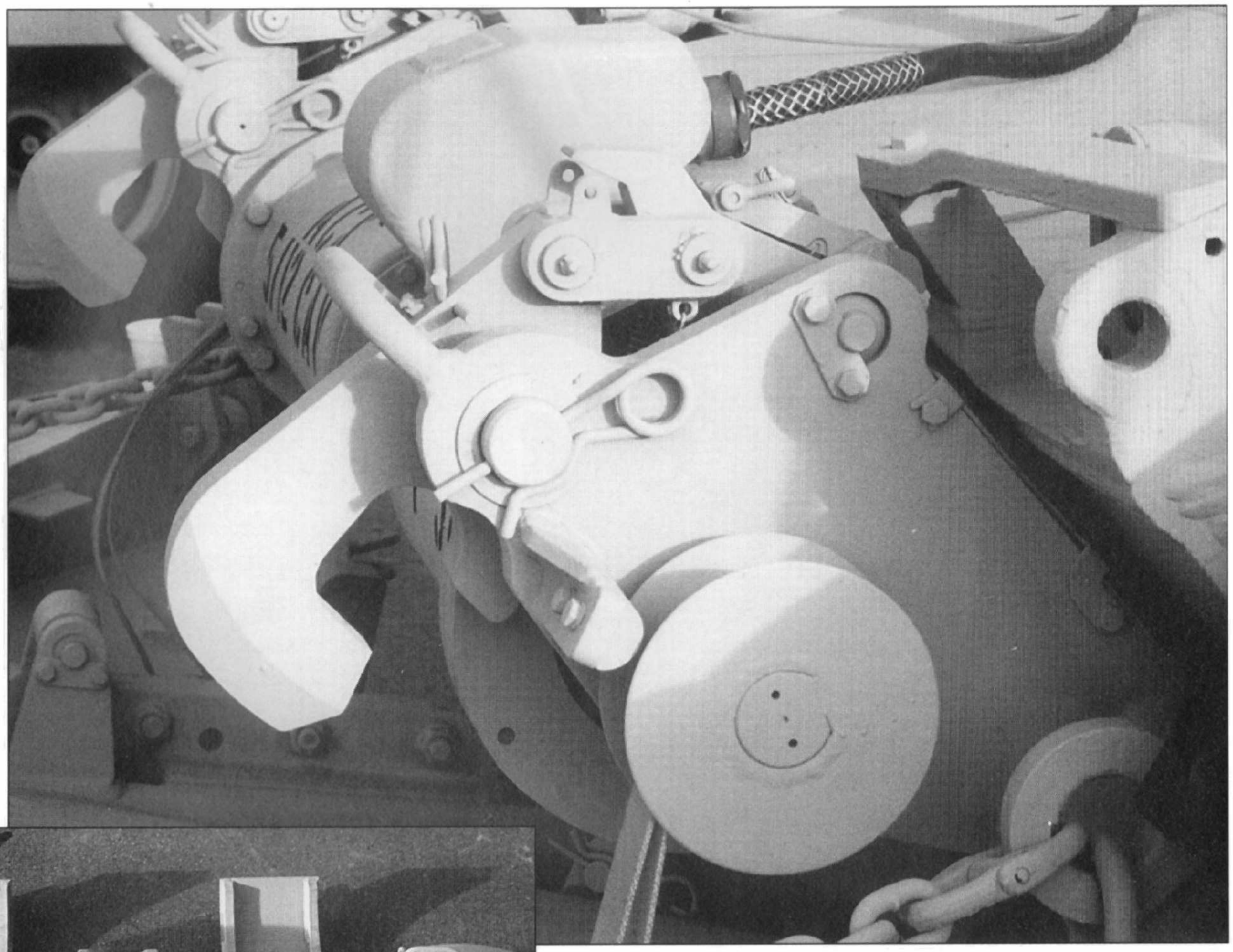
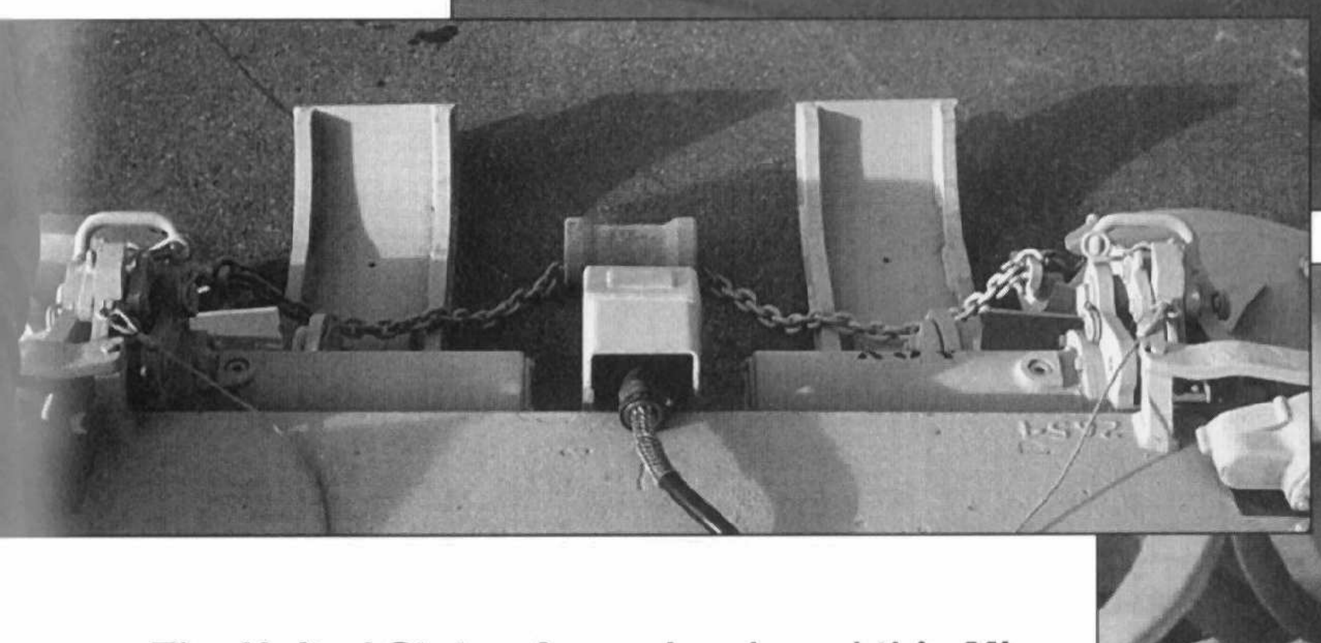




The United States Army developed this Mine Clearing Blade especially for the M1 Abrams. The assembly is designed to clear a path though mine fields so that other M1's can follow. The blades lift mines up and away from the path of the vehicle, rather than detonating them. The blades can be raised and lowered during combat conditions from inside the vehicle by means of hydraulically actuated lift units.

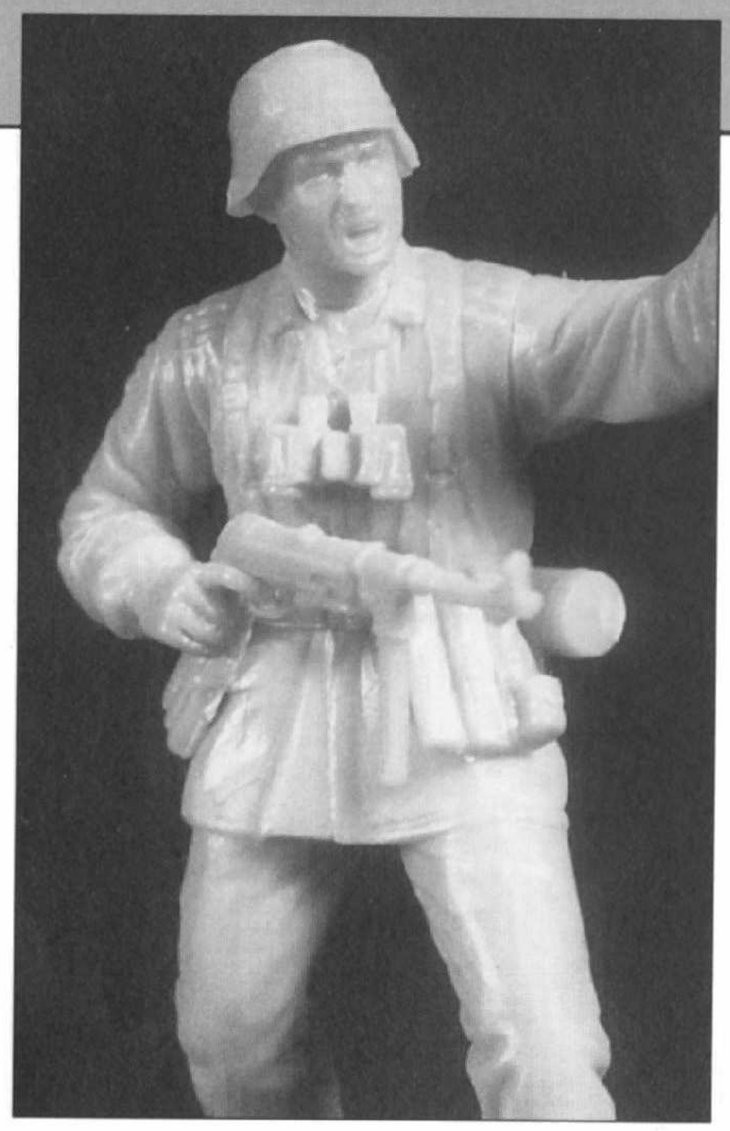
The mine clearing blade was used extensively during Desert Storm. It was frequently used to clear large mine-laden earth works constructed by the Iraqi's.

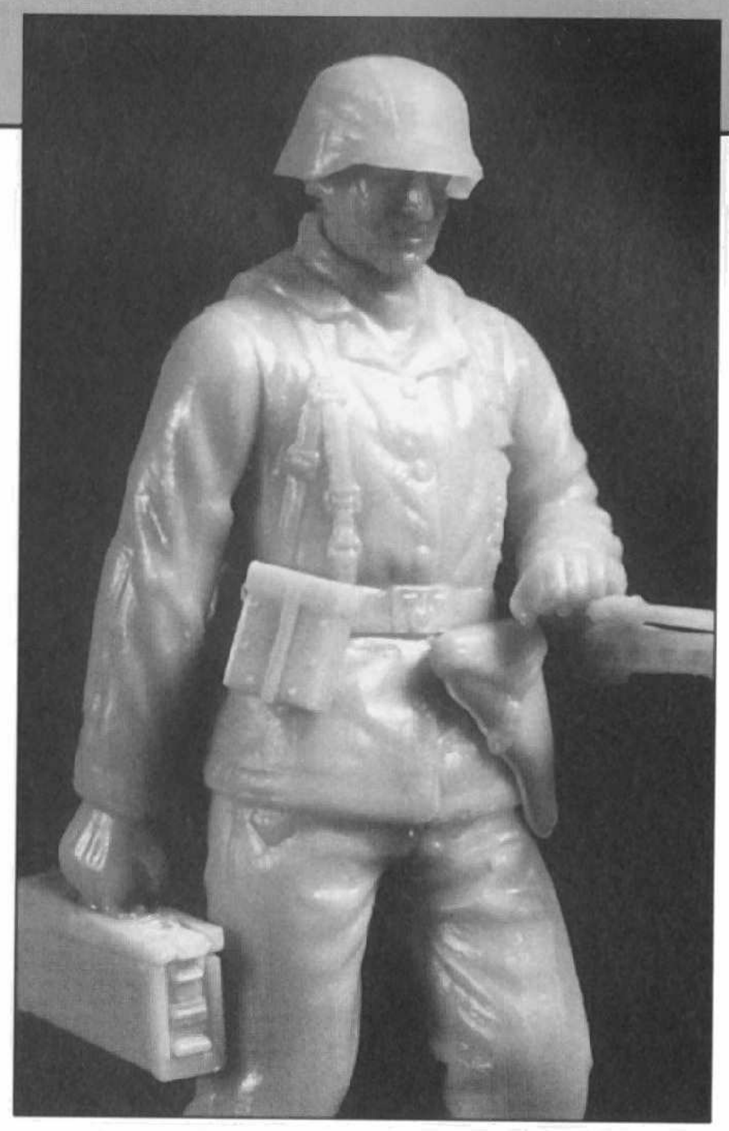
Above left: overall view of the rake assembly lowered in clearing position. Below left: close-up of the hydraulic lifting device. Above right: the large hooks which engage the blade assemblies for road travel. Above: the blade unit as seen from above. Note the hydrolic feed tube and wiring. Right: left hand hydraulic unit and its chain connections.

DML's Waffen SS Infantry

Reviewing their 1st German subjects.

by PATRICK STANSELL





Close-ups of the shouting officer from the Normandy set (left), and the marching MG Schutze from the Ardennes set.

The Hong Kong based Dragon Models Ltd. (DML) has maintained an aggressive release schedule since it first began introducing injection molded plastic kits in 1990.

Accompanying the release of its 1/35th scale armor has been an extensive line of figures. Their earlier releases concerned mostly modern subjects. Starting with the release of their Nashorn kit, DML has began what appears to be a series of German World War Two releases. Billed under the rather tempting sub-heading of "39-45 Series," the first releases were: *Waffen SS (Ardennes 1944/45)* and following close on its heels was *German Combat Unit (Normandy 1944).*

The sets are packaged in a red and white box with the now familiar illustration by Rod Volstad on the front. Its almost worth the price just to get the illustration!

In the past, the DML figures never quite lived up to their box art. I always found them to be somewhat stiff without a lot of attention to anatomy. Hands and feet were the two areas that bothered me most. Admittedly, these are the two areas where almost every figure manufacturer goes wrong at some point in their careers. But hey! what do you want for six-fifty anyway? Am I holding these figures to too high a standard? Maybe. I have always felt that if injection molded figures appeared on the market that where the caliber of their resin brethren, well that would be something to write home about. There really is no reason they can't. It would really be great if I could buy four good quality miniatures for less than the price of just one.

The DML offerings have been gradually improving, and this is indeed evident in these two new releases. Lets take a closer look at each one.

Waffen SS (Ardennes 1944/45)

The back side of each box contains smaller versions of the Volstad illustrations which act as a guide to construction and painting. The various body parts, accessories and weapons are all numbered for easy reference.

All the figures (in both sets) are broken down into separate pieces; legs, torso, head and arms (is this starting to sound like Frankenstein?). The heads are "half heads" to accommodate the different head gear. A single sprue tree contains all the figures and their gear and a separate sprue tree contains the weapons.

Figure number one is the officer. He is outfitted with the late war SS camouflage smock and pants with the officer's peaked cap. He's armed with a MP44, an ammo pouch, binoculars and map case are also provided. The first thing I noticed (on all the parts) was rather thick flash. It was a bit pesky to remove especially on the smaller parts. I guess this comes with the territory given all the folds and intricacies found in a figure.

The detail through out was nice. I especially liked the sculpting of the folds in the thick winter-type pants. Overall anatomy is convincing, although I found his left arm to be a little too long. The right hand is supposed to hold a map, but it would need to be repositioned outward to do so. He scales out to a relatively normal height, about five foot nine. It seems like some of the resin manufacturers think World War Two was fought by the NBA.

The ammo pouch for the MP44 was well done. It has the characteristic bulk to it—if not a little on the thick side. The map case and the binoculars are well done. The best part of each figure is the weapons. The MP44 is particularly neat. All the weapons have a nice heft to

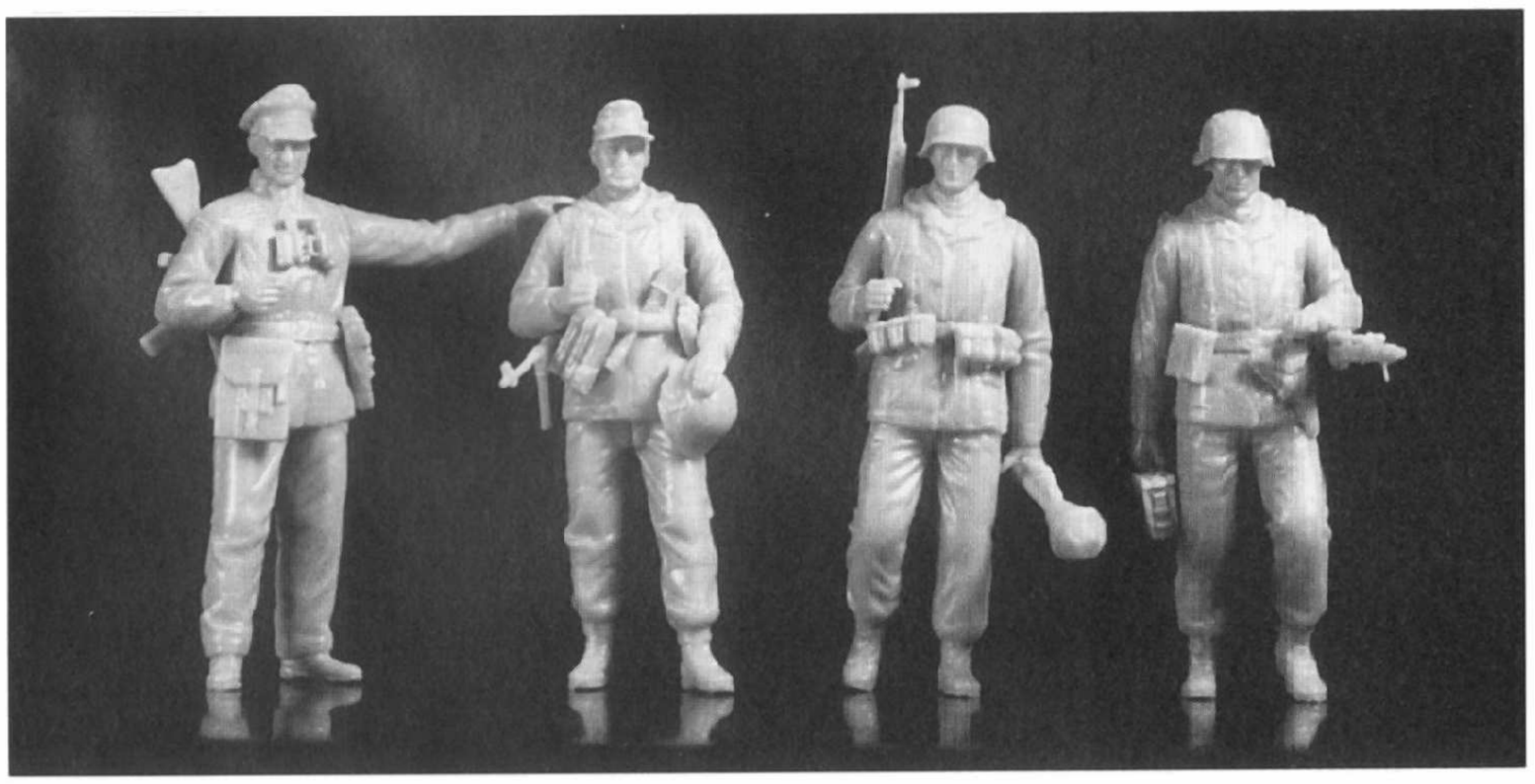
them. They put me in mind of the old Airfix multipose weapons in that they have a more bulky, realistic appearance.

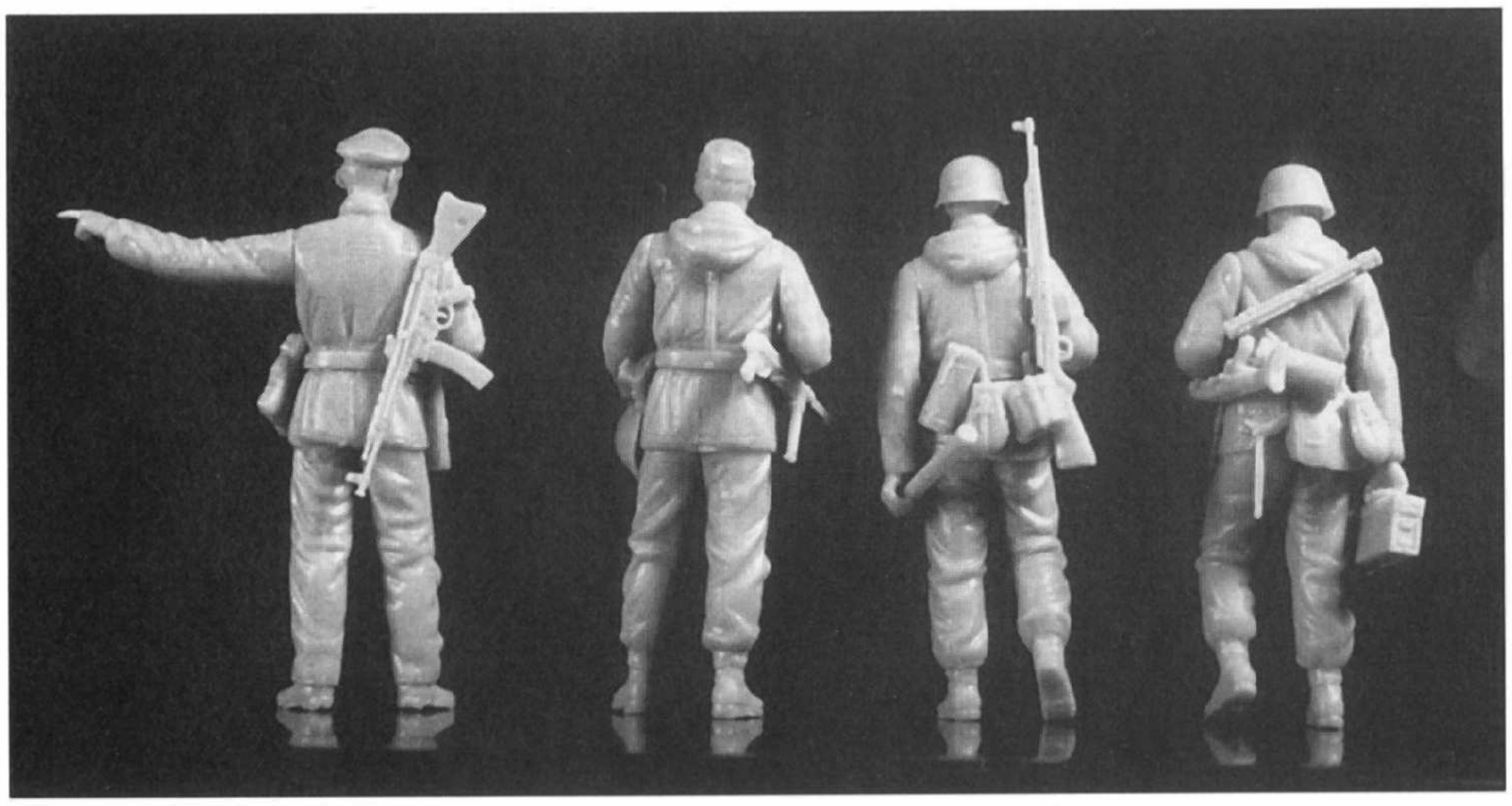
Figure two is shown as a companion figure to the officer, looking over his shoulder at the map. He wears the two-piece reversible winter uniform. Unlike the officer, he is wearing the standard Y-harness for carrying gear. He holds his MP40 slung over his right shoulder and rests his left hand on his helmet, which is attached to his belt. The left arm doesn't quite drape over the helmet as shown, so a little cutting here would be necessary. The sculpting here was consistent, with folds and even seams rendered clearly. The front of his tunic is recessed to receive a "potato-masher" type grenade stuck into his belt. The grenade provided must be cut to fit into the belt.

The two ammo pouches for the MP40 are well formed like the MP44 pouches mentioned earlier. They have that nice dimensional look.

An M43 cap is supplied for number two, but a helmet could easily be substituted. However, the kit only provides one piece of headgear for each figure.

Figure number three is an MG gunner.





He wears the same two-piece reversible winter uniform as number two. He is walking with his left foot forward with his left arm resting on his MG42 and he carries an ammo box in his right hand. The Y-harness is worn. Sculpting overall is consistent with the others. The anatomy is somewhat stiff on this guy... his head is bowed slightly, but his shoulders are straight back. I think that accounts for the stiff look. The left hand doesn't drape over the MG like the illustration shows. More minor surgery. The helmet provided is sculpted with a camo cover.

Like the other weapons the MG42 is excellent. A choice of folded or unfolded tripods are included. The ammo box is a curious little deal. Its composed of four different parts; the top, front, back and main box. Its a little strange, but every part is well detailed. Also included is a nifty spare barrel holder.

Number three comes with the full complement of infantry gear. This is where we come to my major criticism of the set. Most of the gear is not rendered very well. The spades being particularly poor. The canteens are on the anemic side. The bread bags are fair. The best piece of equipment is the gas mask canister, but here that thick flash is difficult to remove without damaging the part. A parts box for the MG, and a P38 pistol holster are provided for ol' number three and they are O.K.

Figure number four is a walking infantryman. He is dressed in the reversible winter uniform, with the Y-harness. He walks with his left foot forward. In his left hand he totes a Panzerfaust, and he carries a Gewehr 43 semi-automatic rifle slung over his right shoulder. A bare steel helmet is provided.

The anatomy has about the right feel for the pose, and the sculpting is good overall. The personal equipment is consistent with the above description. A magazine pouch is provided for the Gewehr and it is nicely done. The standard triple pouch is also provided. This was common practice amongst those armed with the Gewehr—the triple pouch held clips used to reload the Gewehr's magazines. The Gewehr is a weapon not often seen in figure sets. It is a real gem.

The Panzerfaust 100 is one of the best I've ever seen. The figure's left hand appears to have been specially sculpted to receive it—it fits right in. This prevents that "floating" effect.

All in all, not a bad effort by DML here. Still, that slightly stiff feel in some of the poses, and the tacky rendering of the infantry equipment.

German Combat Unit (Normandy 1944)

In spite of its billing, this set clearly depicts and SS unit outfitted with uniforms and weapons typical of the type seen during the battle for the Normandy beaches. Although Whermacht units did wear their own version of the camo smock during this period. Two of the figures wear the SS camouflage smock,

while the other two wear the SS drill camouflage uniform.

Like other DML sets, a single sprue contains all the figure parts and a separate sprue contains the weapons. The main portion of the weapons sprue is identical to the "Ardennes" set. An attached extension sprue contains an additional Panzerfaust and a 98k rifle.

Well, this is certainly something different from our old friends at DML. These guys have really outdone themselves. The level of detail is really quite extraordinary. Even the metal clasps that hold on the helmet covers are present. The overall sculpting and anatomy are first rate. I've never seen anything like this in injection molded plastic. This seven dollar figure set puts some twelve dollar resin figures to shame. On the down side, the flash monster was back on this one, particularly troubling on the smaller parts. Here's what each figure looked like.

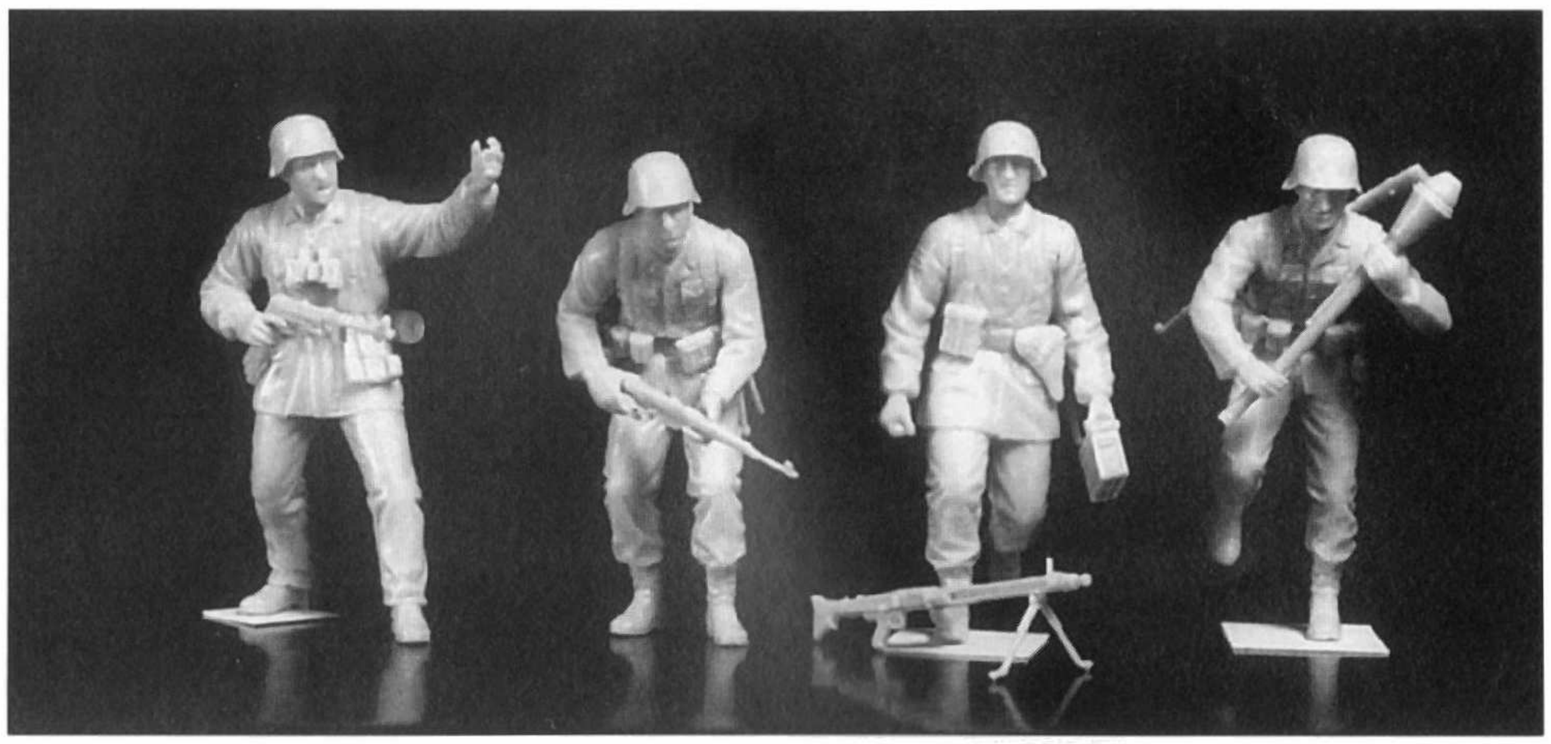
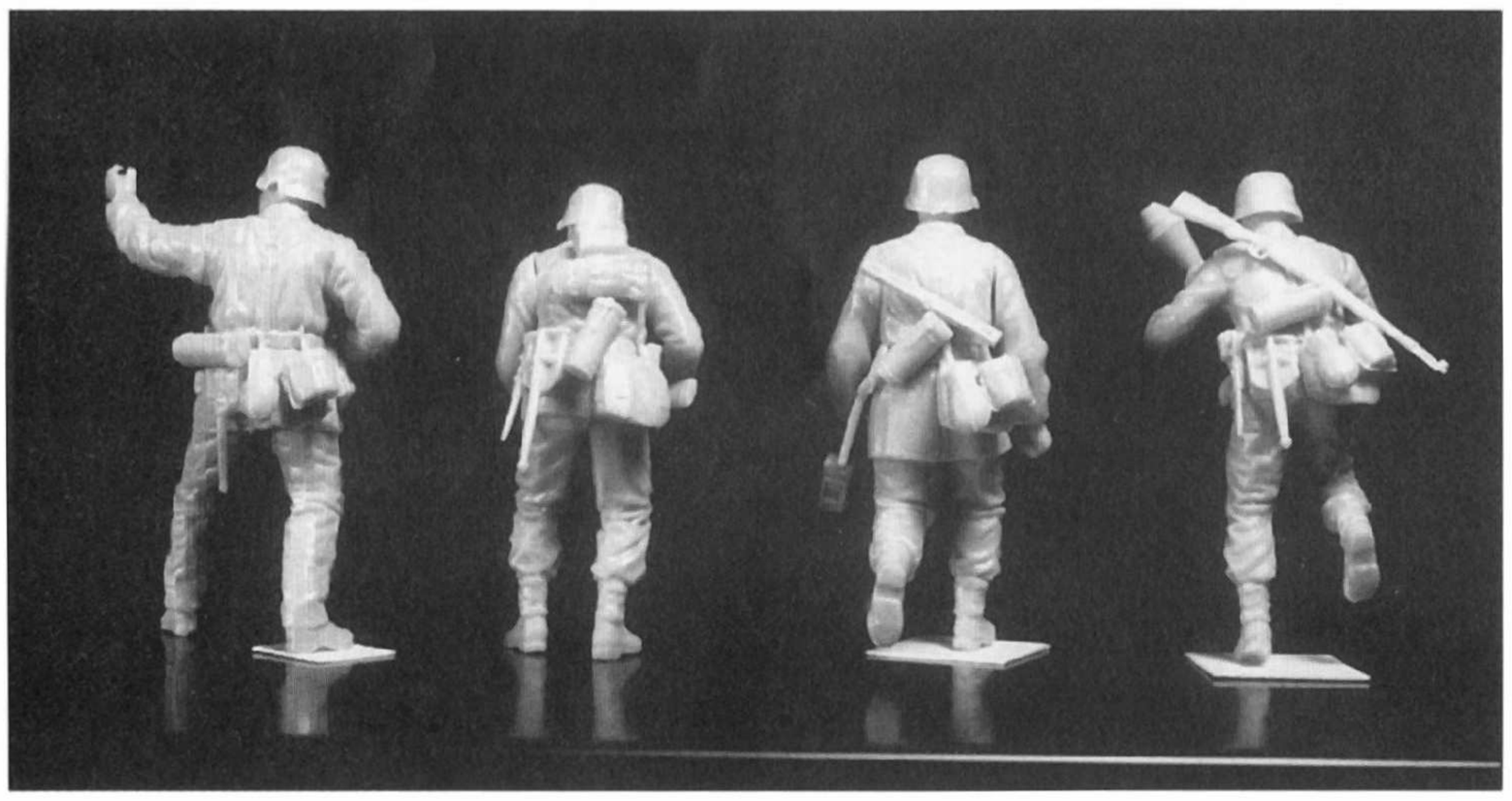


Figure number one (again, following the sequence on the back of the box) appears to be an officer or an NCO. He wears the camo smock and pants worn outside his boots. He's armed with an MP40 and carries the full complement of infantry gear. Y-straps are molded on. All the figures come with the helmet fitted with the camouflage cover.



Like all the figures in the set, this one is posed "in action." He holds his MP40 in his right hand and is gesturing with his left. His face is sculpted as if barking a command. As I mentioned at the top, the sculpting is much more defined than normal. The folds and uniform details have more depth and the faces convey more of an expression. And yes, finally, boots that are well formed and in proportion. Two very nice MP40 pouches and a pair of binoculars are included.

Two things rain on this otherwise sunshiny day: first, the equipment is the same as in the previous set. The same malformed water bottle, etc. Secondly, instead of the half heads seen in the previous set(s), this set offers full heads. These must be cut down to fit the helmets, and the helmets must also be trimmed down on the inside. In all instances the surgery was severe and tricky.

Figure number two is posed crouching forward, holding a Gewehr 43. This pose appears to have been inspired by a photo in Andrew Steven and Peter Amodio's excellent book on the Waffen SS (page 49). He wears the two-piece drill type camouflage uniform, with the pants tucked into gaiters.

The pose is very convincing, although he doesn't really grip the gun. Some additional equipment items are provided for this figure, not seen in the previous set. One is a different spade, which is better rendered than the earlier version. Also unique to number two is a bayonet in its scabbard, and a rolled up poncho. The triple cartridge pouch and the double pouch for the Gewehr are provided.

Figure number three is of an infantryman running while gripping a Panzerfaust in both hands. He also wears the two-piece drill uniform with the Y-straps. He is armed with the 98K rifle, which is worn slung over his back.

The pose here is very stiff and he is the exception amongst the set. The arms are too far forward and this throws off the pose. Without the arms the pose looks correct, so a little minor cutting and repositioning of the arms would remedy the problem I think.

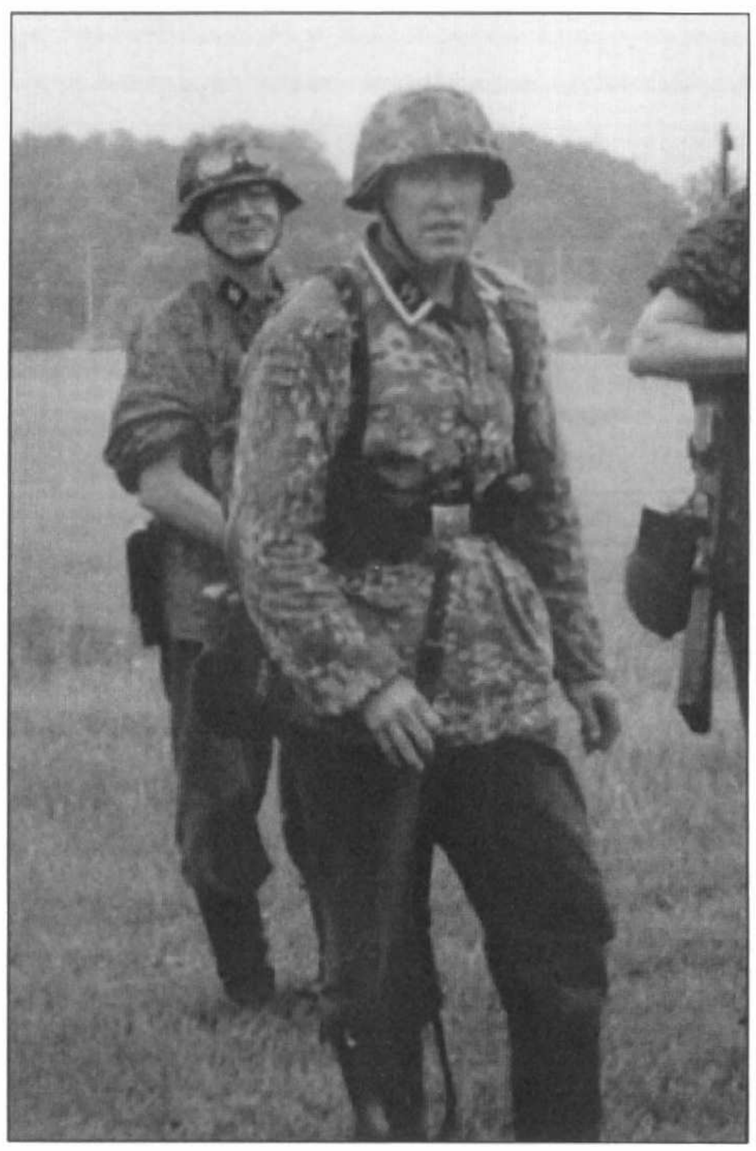
One of the newer type spades is provided for number three as is the bayonet frog. Two neat little egg-shaped grenades install under the cartridge cases. The triple cartridge cases provided differ slightly from those in the Ardennes set. They are now curved to conform to the figures torso. Nice touch.

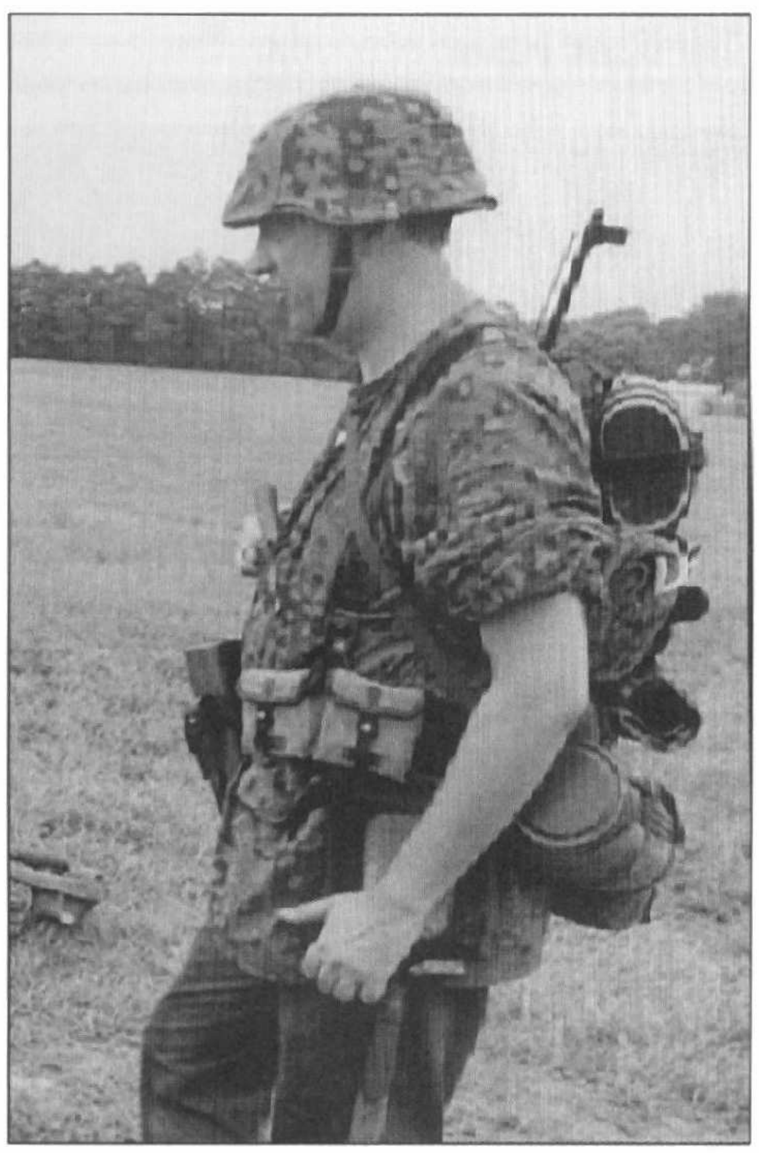
Another nice touch is that the right hand comes with the end of the Panzerfaust already molded in it. This helps the figure appear to grip the weapon. The Panzerfaust needs to trimmed to fit.

Figure number four is an MG gunner posed running in a crouch with an MG 42 in his right hand and an ammo box in his left. He is wearing the camo smock with the Y-straps, along with regular pants, boots and gaiters.

The pose is effective, with the appearance of someone running at slow trot. The shoulders are appropriately hunched and the neck craned forward.

No new gear for this dude, he gets the old style junky type shovel too. The same





The photos on this page will give the modeler some ideas of how troops in the field arrange their equipment. Although these subjects are contemporary re-enactors, like combat troops, they always try to arrange their gear in the most practicle and comfortable way.

multi-piece box ammo and spare barrel holder are provided that was seen in the Ardennes set. The MG42 is also the same, which is very nice. The right hand does not grip the MG, but rather the strap, so one would have to be made.After assembly was complete, an extra MP44 and a Panzerfaust were left. Bonus!

Conclusions

In spite of some minor criticisms, both sets represent an exceptional value for the money. I highly recommend them both to modelers of all levels. Modelers who have substantial figure experience should not pass off these sets lightly. Set 6003, the German Combat Team, especially has tremendous potential. Conversion freaks and super detailers will have a field day. Buying extra sets just for the weapons would be worth the price.

Considering the popularity of the subject matter, these should be big sellers for DML. I look forward to future releases, given the jump in quality between the two sets reviewed here. I also wonder what that subtitle means: *'39 -'45 series*. According to the box art on the German Combat team, the next set will be of German Fallshirmjagers. I can think of a few ideas. Like German infantry, France 1940? Or perhaps German tank crews? How about a decent group of U.S. GI's? Let's hope DML keeps up the good work.

MMiR RECCE

DML Waffen SS (Ardennes 1944/45). Kit number 6002.
DML German Combat Team (Normandy 1944). Kit number 6003.
Both purchased from Orange Blossom Hobbies, Miami, Florida. Price was $6.50 plus local tax.

References

Waffen-SS Uniforms, in colour photographs. Arguably the best general reference on SS Uniforms. Contemporary photographs of original uniforms in full color throughout. Covers all types of uniforms and gear, including everything represented in the DML figure sets. I purchased my copy directly from the publisher (Windrow & Greene Ltd., 5 Gerrard Street, London W1V 7LJ), but it is available through many hobby shops and mail order outlets. The price is about fourteen dollars.

Waffen SS in Action. Squadron Signal Publications. An oldie but a goody. Basic, inexpensive reference on the Waffen SS. Black and white photos and some Ron Volstad paintings from about 10,000 years ago (O.K., maybe 5,000 years ago). Available everywhere Squadron Signal Publications are found, about nine dollars.

ZSU 23-4M Shilka

Reviewing the DML kit and the MB Model's brass detailing set

Overall views of the finished model. Eric chose to finish his model in a scheme taken from Grenadier Publishing's "T-72 Battlegroup."

by ERIC KNIGHT

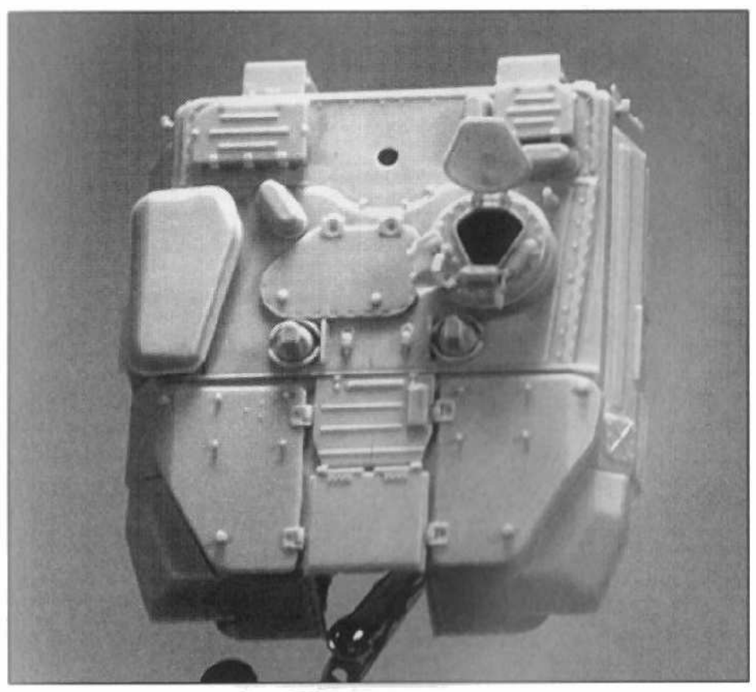
After a wait of nearly two years, DML finally released its ZSU 23-4M Shilka air defense vehicle early in 1993. Not long after the kit hit the hobby shops, MB Models announced the release of a photo-etched brass detail set. I ordered both the kit and the detail set, knowing that if DML held true to form on its armor kits, I'd need some extra help. It seems their kits run into trouble when it comes to the smaller details.

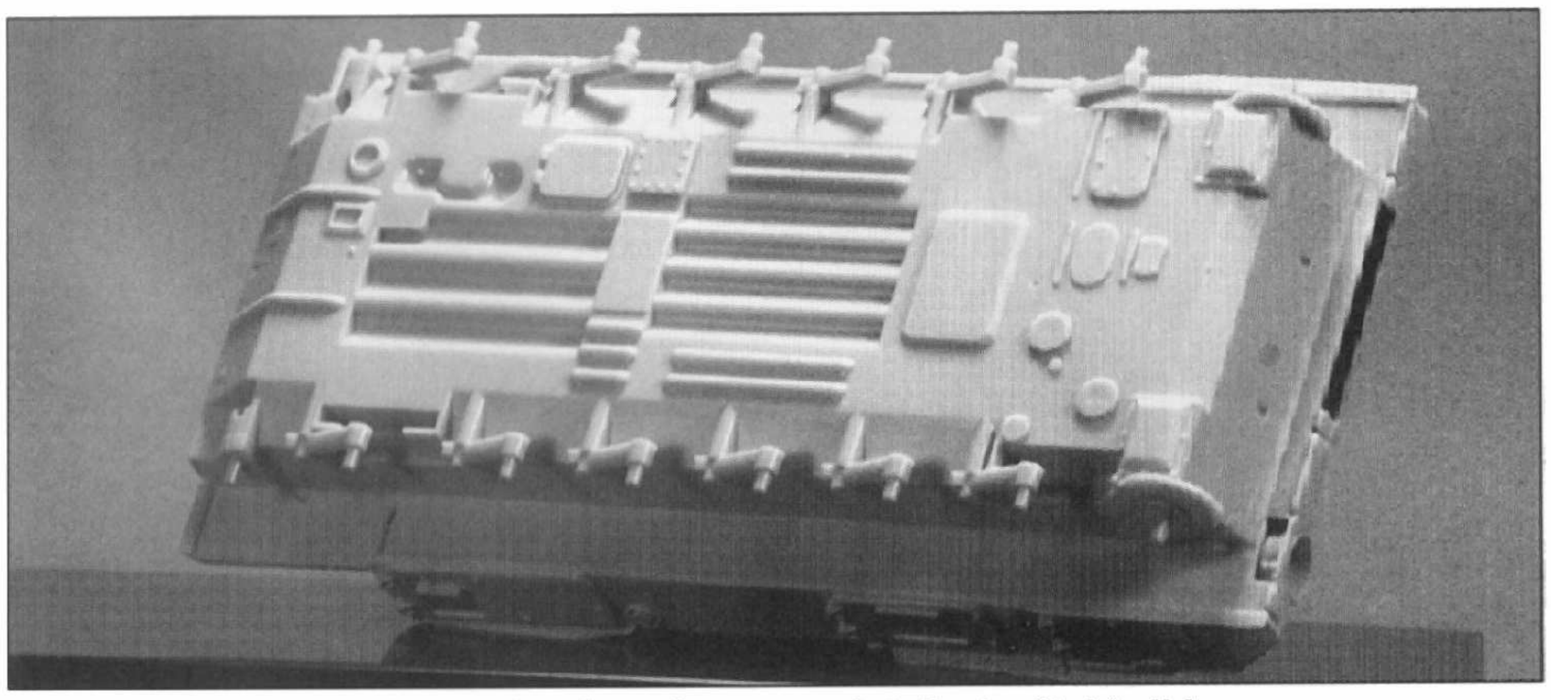
The DML ZSU 23-4M is molded in light gray plastic with an acetate windshield and string for tow cables. It contains over 400 parts, half of which are the link-to-link type track links. Six separate sprues contain the parts, two are devoted to the tracks. A colorful decal sheet gives the modeler nine marking options.

The Guns

Upon sitting down to start, I immediately began on the "way cool" gun assembly. Work commenced with hollowing out the gun muzzles (E30 and E49) and the shell ejector ports (parts C6 and C9). The upper and lower assemblies were then built according to kit instructions with the exception of substituting the kit's support arms (C22 and C26) with the thinner MB parts (MB parts A and B). Three brass pieces make up each replacement part.

Each gun barrel has a coolant water line over it. On the real Shilka, these lines end in hoses which go back into the main turret. I fashioned these hoses from Verlinden shrink tubing and slid them onto the ends of the water lines. I left 11/2 inches extra on each hose to allow for fitting them into the final gun assembly. Small internal lines run from





Left: turret top. The complex design and appearance is evident. Right: the very handsomely engraved, fully detailed hull bottom.

the top of each gun body and bend forward and under it again. These were fashioned from bent brass wire. I added some brass to the undersides of parts C3 and C4 for a little extra detail.

The actual vehicle had small covers for each of the gun muzzles, which prevented rain from entering the muzzles when the gun was cranked up to its full elevation. The MB set provides small discs (parts C) for the covers. I added mine and detailed the attachment straps with lead foil.

The guns were then placed in their mounts (D10-12). The shrink tubing hoses were threaded through the large holes behind the top gun mount. Excess tubing was then cut off. The mounting pins for the guns were trimmed flush with the outsides of D10 and 11 so that the assembly could be easily removed from the turret when painting.

The whole assembly was painted flat black and over sprayed with Modelmaster/Metalizer Dark Anodonic Gray. The hoses were left black.

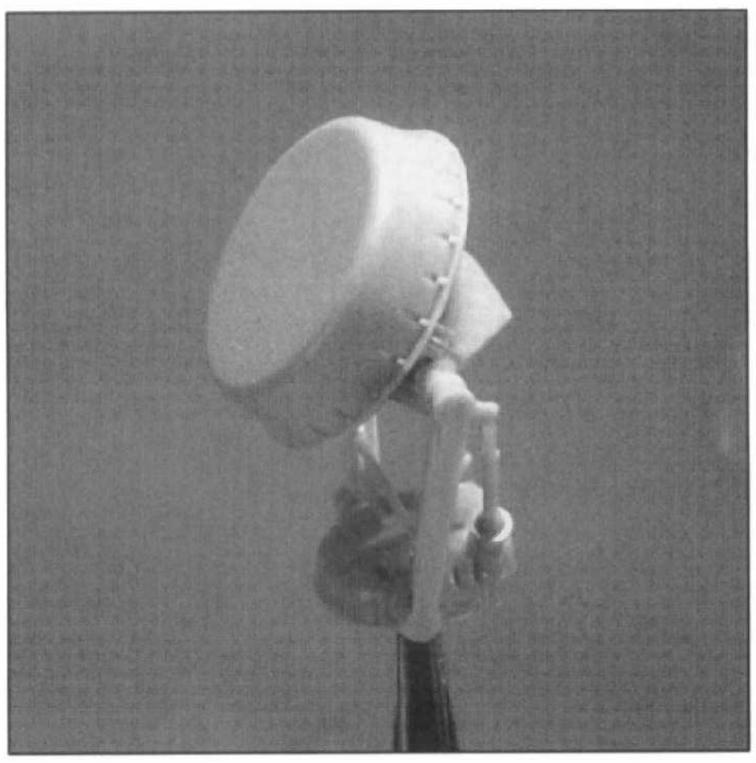
The Turret

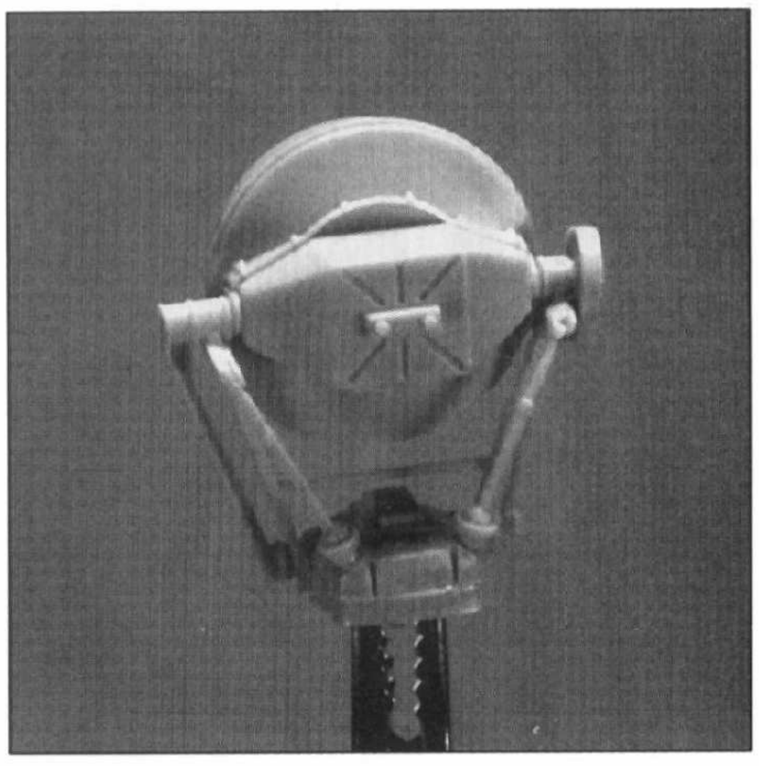
The turret assembly went together with some minor glitches. There were some noticeable gaps where the sides meet the rear panel and where the top and bottom turret parts meet at the front. Fortunately, the front mating surface is very difficult to see when the model is finished.

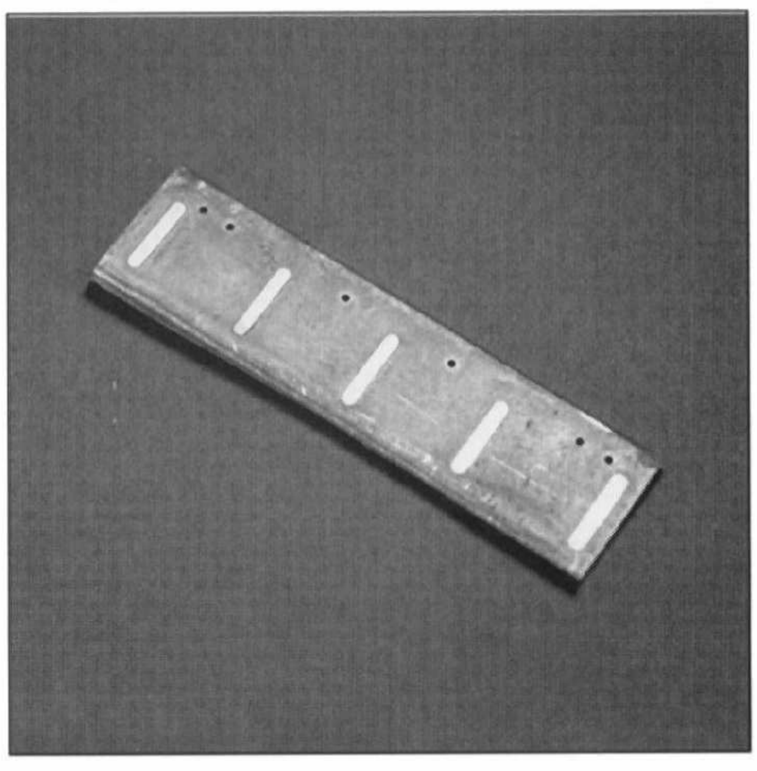
DML held true to form with its working hatches and ammo bin covers. It would have been a nice idea had there been anything at all to see under them, but there isn't even any detail on the underside of the main hatch. The ammo bins are large enough to store spare change or loose buttons, so maybe they're not totally useless. Anyway, I opted out and glued them shut. *[see accompanying detail article—Ed]* The commander's rotating cupola (part C37) did not fit well and took some playing around to get straight.

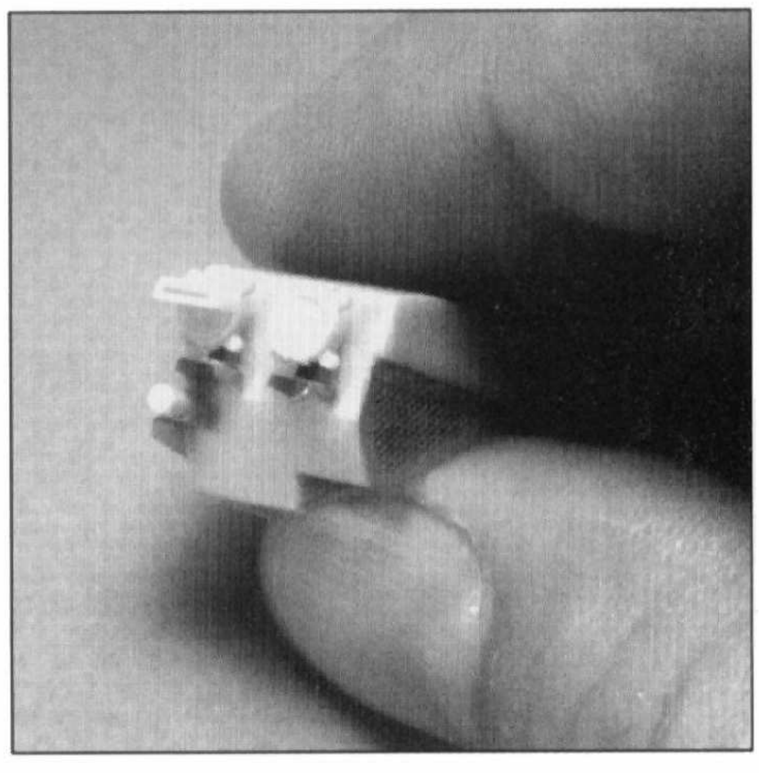
On the good side the turret contains some impressive engraving details. The turret of the Shilka was an especially complex piece of machinery for a Soviet vehicle and when (finally) assembled the DML turret really brings it across.

Next came the toughest part of the MB brass. MB provides screens (part M) for the undersides of hoods D2 and 3. The

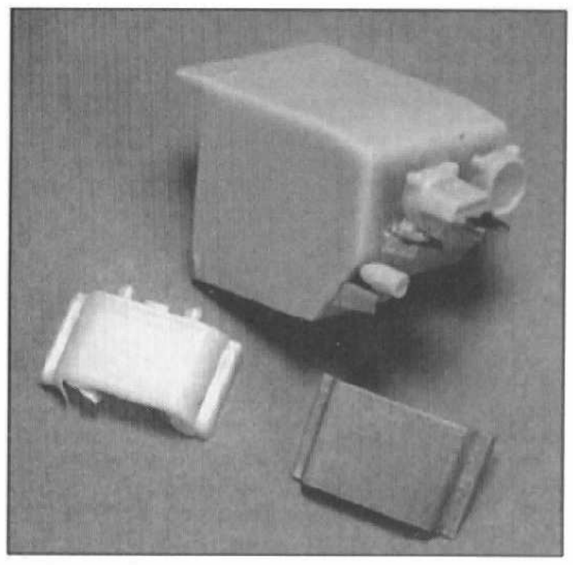




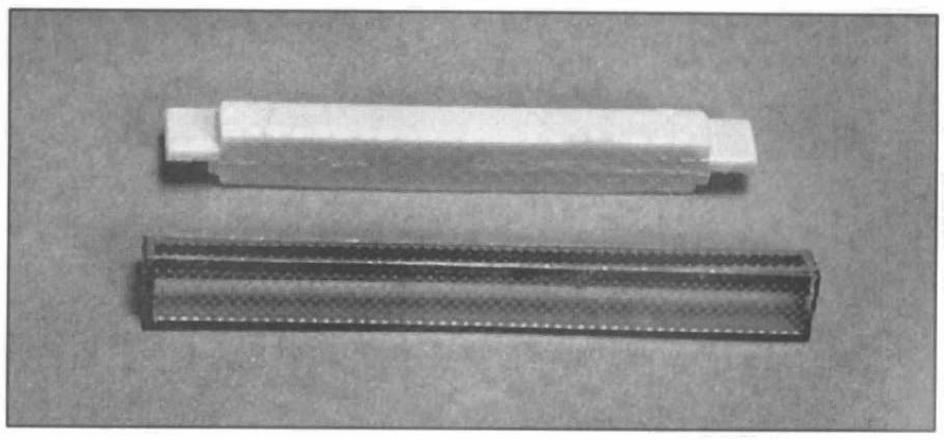


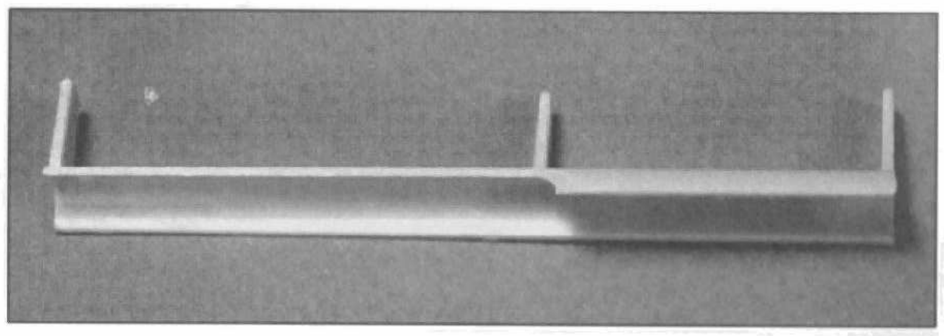


Top left and right: two views of the radar assembly before detailing. Bottom right: front light pod during construction. Bottom left replacement gear shelf.

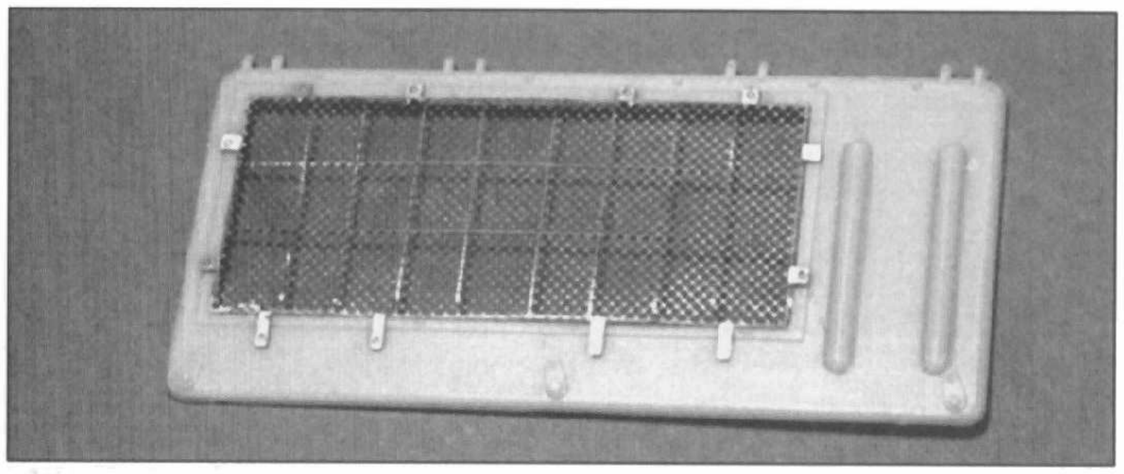


Above: the front light pod. The kit's hood is seen on the left and the replacement brass part is on the right. Top right: the under hull screen and it's replacement brass assembly.

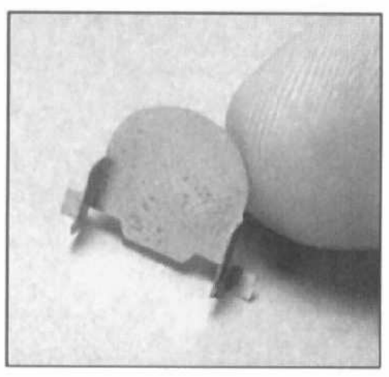




The DML kit's log holder.



The main exhaust panel with the MB screen installed.



The brass APU cover and hinges.

instructions warn that the parts are optional for the superdetailer. I decided to gut it out anyway. D2 and D3 fit over the complex shapes of turret side parts D8 and B32. The screens are supposed to be trimmed to fit over this detail. After trying to devise some clever way to do it, I settled on cheating and chopped the tops off the fronts of D8 and B32. After painting, the screens really are the only things visible—the shortcut worked.

DML provides covers for the main sighting periscopes which can be left either opened or closed. The periscopes themselves looked O.K., but the MB Models set contained brass faces to detail them. I left one covered and used the MB brass to detail the other. I hollowed out the periscope, painted it silver, and added an MV Products lens—per the MB instructions. The instructions suggest adding thin acetate (you could use the kit's) for the "glass" portion of the periscope. I had another idea (brainstorm!). I filled the glass portion of the MB periscope with 5 minute epoxy while it was on the sprue and allowed it to dry thoroughly. When installed and painted, the periscope became the best part of the kit. It looked like the real thing.

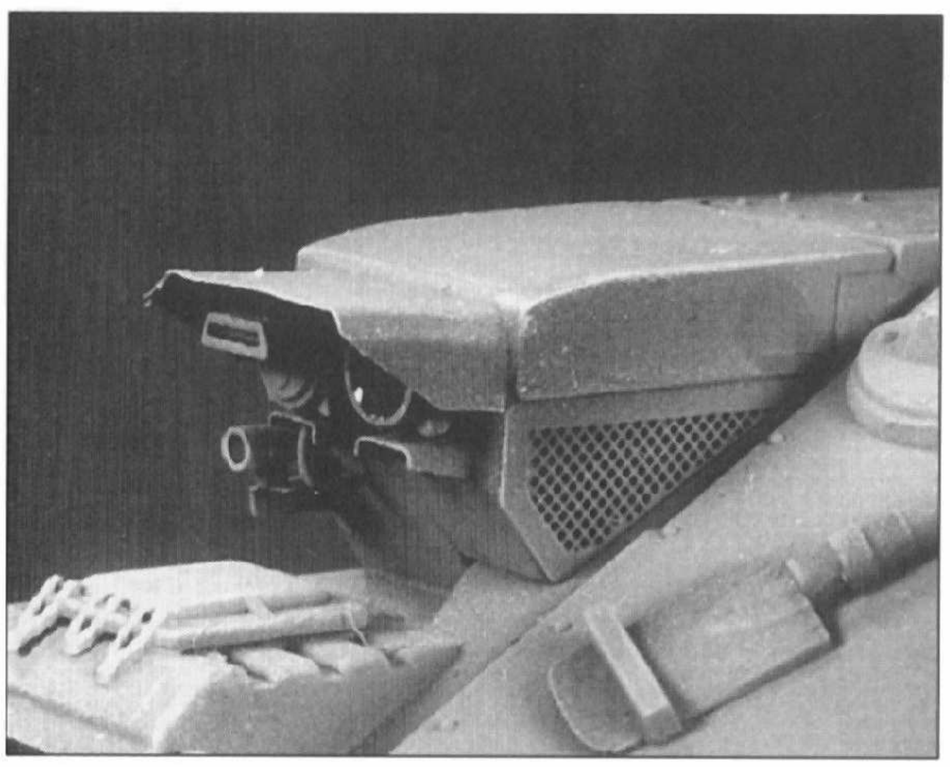
The radar assembly went together with no problems. This builds up into a convincing little replica. It can be shown either raised or in its stowed position. Two types of extension brackets are provided, C17 or C18. More shrink tubing and brass wire were used to simulate the array's power lines. The rest of the turret went together as per kit instructions with the addition of radar support arms on either side of the center door on part D17, and handles on the front and back of the water tank (B30 & 31).

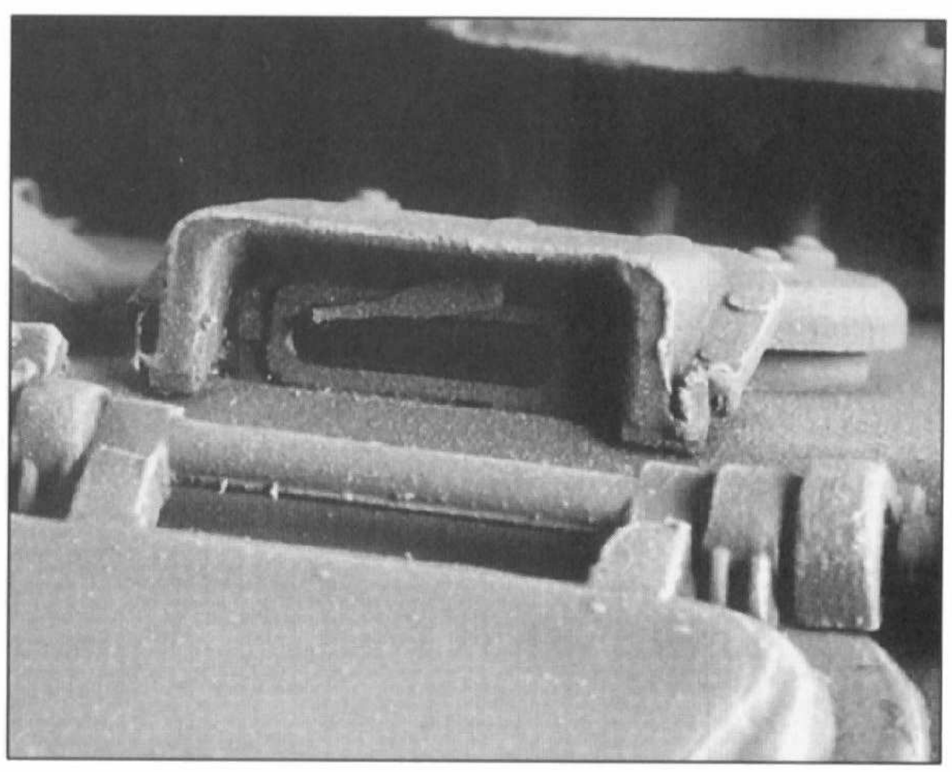
The Hull

After finishing the gun and turret assemblies, I began on the hull. I was again reminded about what I didn't like in DML's armor kits. Although many sections of the hull were wonderfully engraved with detail (the bottom of the hull was great!), others were rather crude. The engine deck screens (3) were solid plastic, the rear fittings were thick and featureless and the hinges on the many access panels lacked detail. The large saw commonly found on Soviet vehicles is molded right on the hull. Something most kit manufacturers haven't done in years.

I also found the basic engineering of the hull lacking. The upper hull breaks down into three different pieces (D1, B26 and 25), rather than just one as you'd expect. This leads to fit difficulties along the seams, and it took a bit of coaxing to get all to go together. Its all a little puzzling... it should have just been one piece.

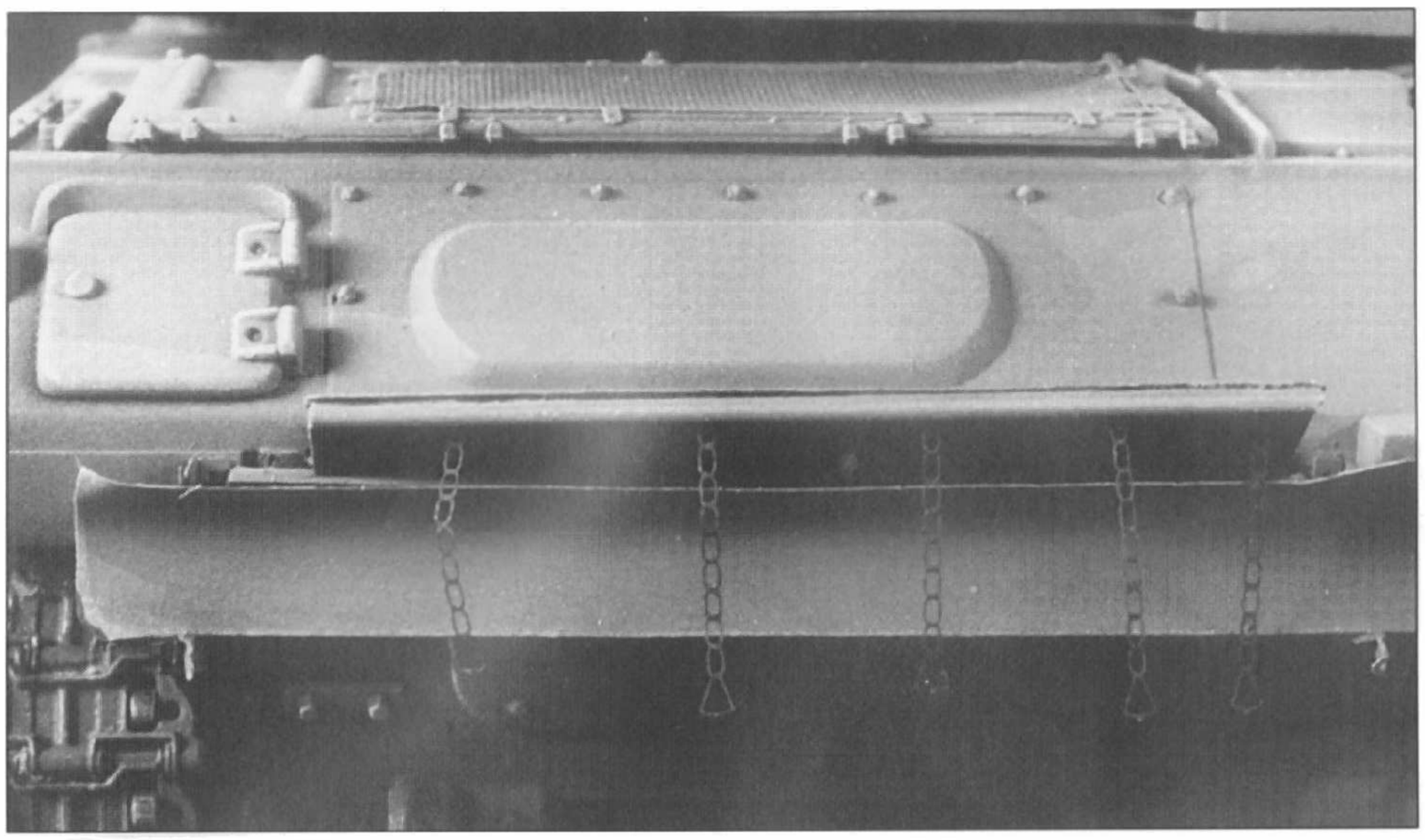
Fortunately, the MB replacement parts resolved many of the hull's detailing problems. The main engine deck,





Left: completed light pod after installation and painting.

Right: driver's position showing Eric's add-on wiper.



The rear hull, completed and painted

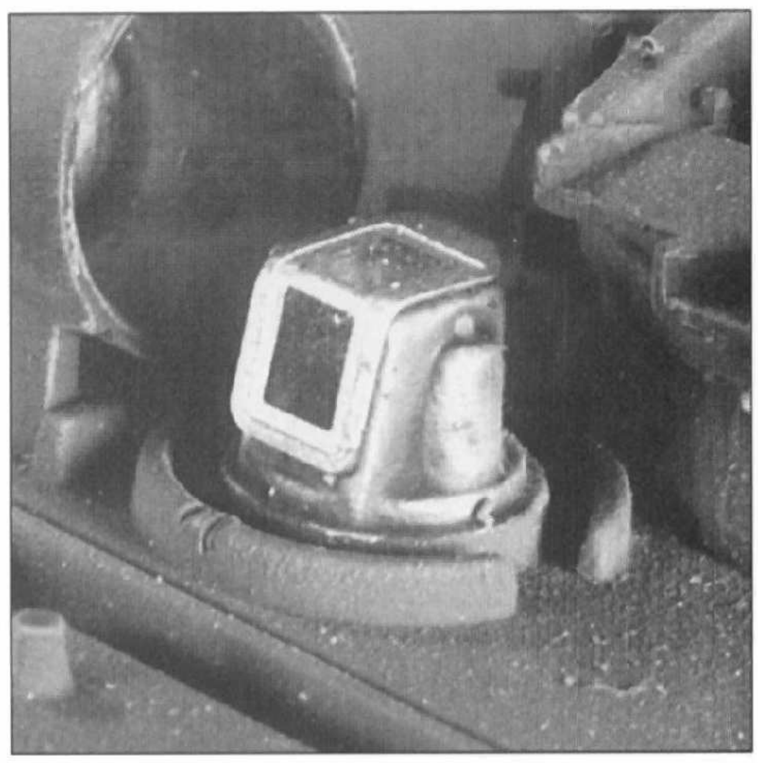
exhaust, APU exhaust, storage shelf, unditching beam holder and underside grille were all replaced with brass parts. The plastic engine deck grille had to be removed from part B1 along with the plastic beneath it on part D1. On part B1, I gently scribed along the inside edge of the plastic screen with my X-acto until the part could be popped out. The hole in D1 was given a greater width, so no ridges would show through the screen on the finished part.

The MB brass engine deck parts (V and W) were extremely thin and delicate. Removal from the sprue took a great deal of time and patience to avoid bending or distortion. I laminated the MB parts W on top of V per the instructions, and tacked them together along their edges with thin super glue. When bonded together the parts were more rigid and workable. Small drops of slow cure super glue were placed on the 12 attachment points and the screen was laid onto part B1. Some Evergreen clapboard styrene was used to simulate the radiator flaps underneath the grille. The lower rear screen (part B4) was replaced by a neat little box formed by MB brass parts R and S.

The unditching log holder (DML part B24) was replaced by the MB parts U and T. Part U, the log holder, was shaped around a 1/4" brass tube until it fit into its holding brackets (part T). The log holder is perfect for denting, dinging, and damaging—in fact, it looks better damaged. MB provides the full length part, but I've seen vehicles where the part just covered the distance between the two brackets. I installed the longer version. The stowage shelf (MB part O), chains (MB parts P) went on as per MB instructions. The rear Auxiliary Power Unit cover (DML parts B8 and B22) was replaced with an MB assembly made up of MB parts Q. The APU cover, its hinges and the cover detail are all provided. The rear hull panel between the engine deck and stowage shelf is supposed to have bolt detail around its edges. I added Grandt Line bolts to fix it.

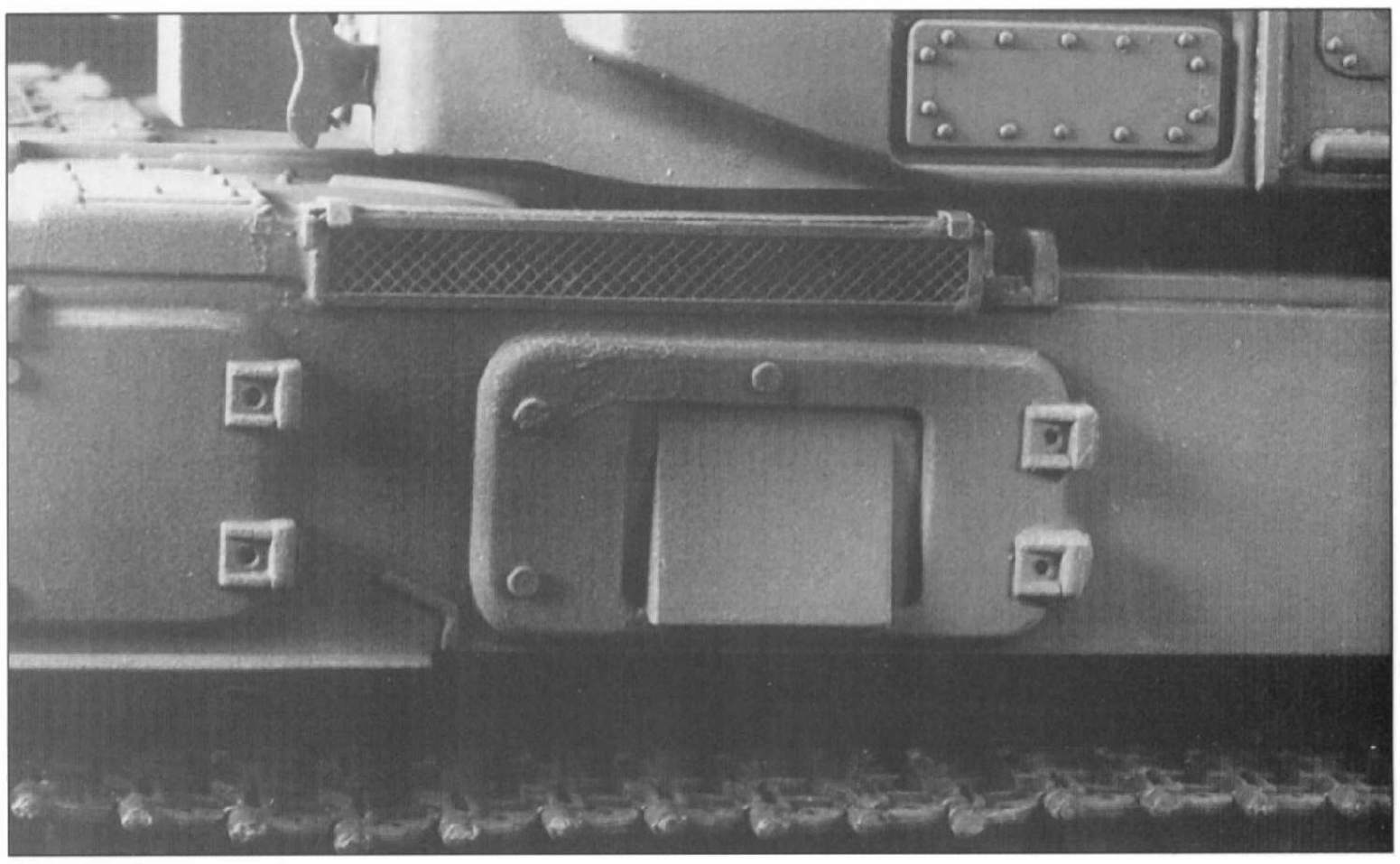
The hull sides required a little rework. MB brass screen (part X) replaced the molded-on plastic screen on part B26. Rather than drilling out the old screen, I lopped off the whole assembly and built up a new box around the brass part with 010 plastic. I did away with that molded-on saw and cradle from part B25 and made a new one with stowage clasps from spare brass. Rather than removing and replacing the featureless access port hinges from B25 and 26, I detailed them with some brass lugs from the spare parts box.

The front hull went together without too many problems. My biggest disappointment was the driver's hatch. The entire hatch can be opened or just the driver's windshield cover (part B10). Again, no detail is provided for the insides of either part, so I closed them both. MB brass parts replaced visor covers, headlight covers and headlight bases. I thought that bending



Above: completed periscope assembly.

Below: side exhaust with the MB Models brass replacement screen.



their complex shapes, especially headlight cover L, would be tough, but MB etched guide pips onto the bend lines of their parts. Getting correct shapes took a few adjustments, but no real difficulties were encountered. The kit part B7 ended up having five detail items added to it: the two light brackets (MB part H); the light hood (L); the front convoy light bracket (I) and the side screen vent (G). Watch the spacing of the lights on the front of B7, they need to fit under the visor, MB part L.

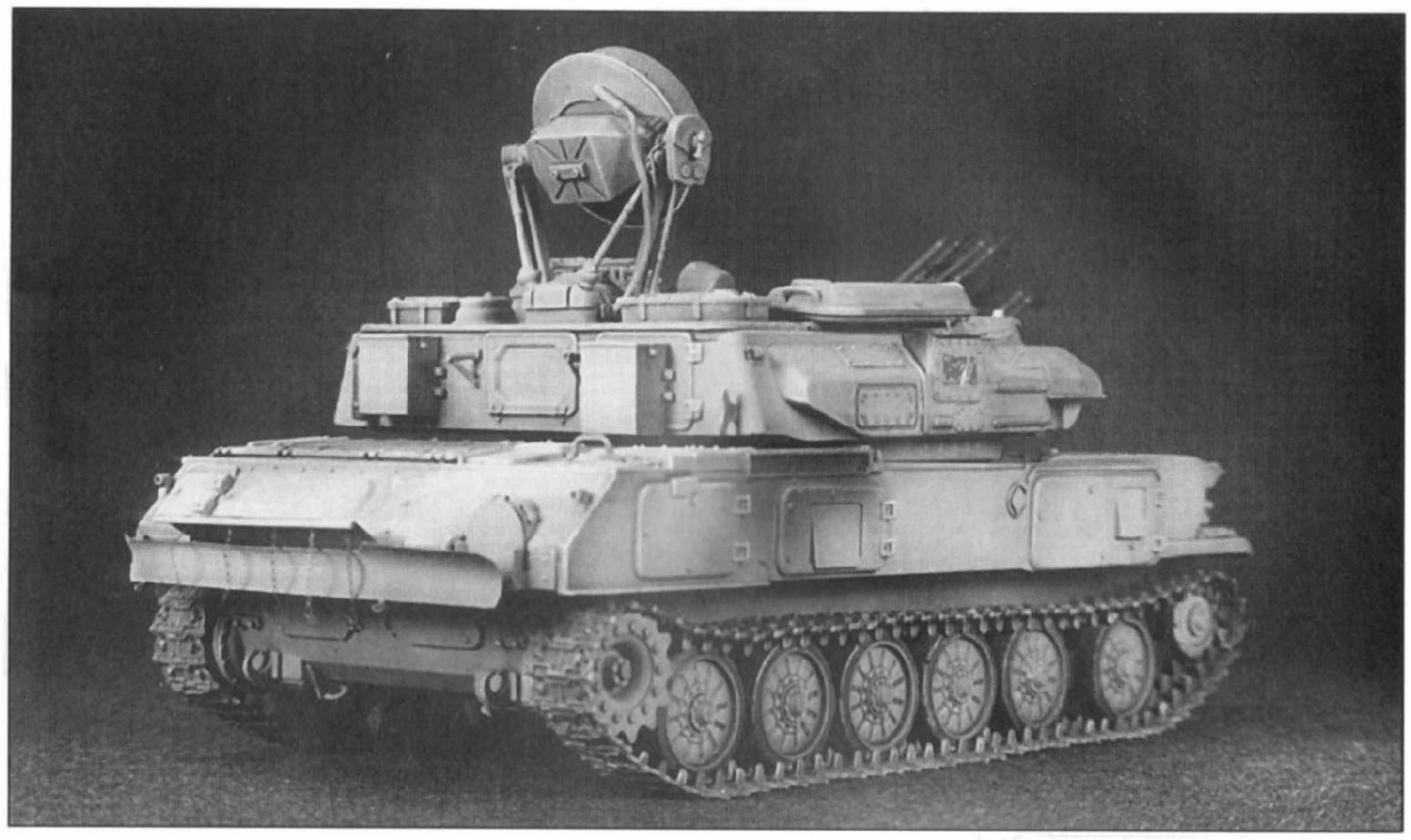
I added windshield wiper blades to the visors (E40 and MB part D). I added strip brass brackets to the glacis where the tow cable, if fitted, would go.

Painting and Finishing

I chose to finish my Shilka as the Iraqi vehicle picture in Grenadier Publishing's book: T-72 Battlegroup. Fortunately, DML provides excellent markings of this same vehicle in the kit (along with Soviet, East German, Lebanese, Czech, Polish, Hungarian, Vietnamese, and Syrian ZSUs). I left the wheels and tracks off the hull and painted them separately. The turret, (minus the guns) and hull were sprayed flat black, then overcoated with an uneven layer of Humbrol Khaki. High spots and flat surfaces were over sprayed with lighter and lighter shades of khaki to bring out greater depth. After allowing the paint to dry, the entire model was brushed with black artist's gouache mixed Future floor wax (its weird but it works).

When the Future wash was dry, I applied the decals using Solvaset setting solution (decal 9 goes over a panel with some serious raised detail). After the decals set, I dry brushed the model in lightening shades of khaki and finally in sand lightened out to almost white. My only deviation from the actual vehicle was in painting the radar dish gray rather than sand. Many Shilkas have gray dishes (including Iraqi ones) and I thought the contrast looked better. Anyway, the whole vehicle was dull-coated and flat black was lightly sprayed on the gun muzzles and exhaust ports to simulate soot.

At this time the wheels and tracks were installed. The wheels look nice, but are little too flat and should bulge out more. The link-to-link tracks went together surprisingly well and fit onto the suspension with no problems.



Conclusions

Aside from the turret fit problems and oversimplified hull details, the ZSU is one of DML's better armor kits. This kit rides the crest of DML's extensive line of Soviet/Russian releases. The overall effect of the finished vehicle is quite impressive. It also represents a definite improvement over their earlier releases, and is literally worlds away from the resin versions seen over the years. DML kits are always a good buy for the buck, the ZSU selling for between nineteen and twenty-five dollars retail.

The MB brass set fixes most of the kit's shortcomings—it seems designed to do so. It would have been good if the sheet had included more small details, i.e. saw cradle, hinge details, tie down and stowage box clasps. With so much brass devoted to so many major parts, adding these details would have probably made the sheet just that much more expensive. The cost of the MB set is about the same as photo etched brass sheets from Japan, about eighteen dollars.

DML's Shilka, together with MB Model's brass detailing set can be built into a very nice model. Both kits are recommended.

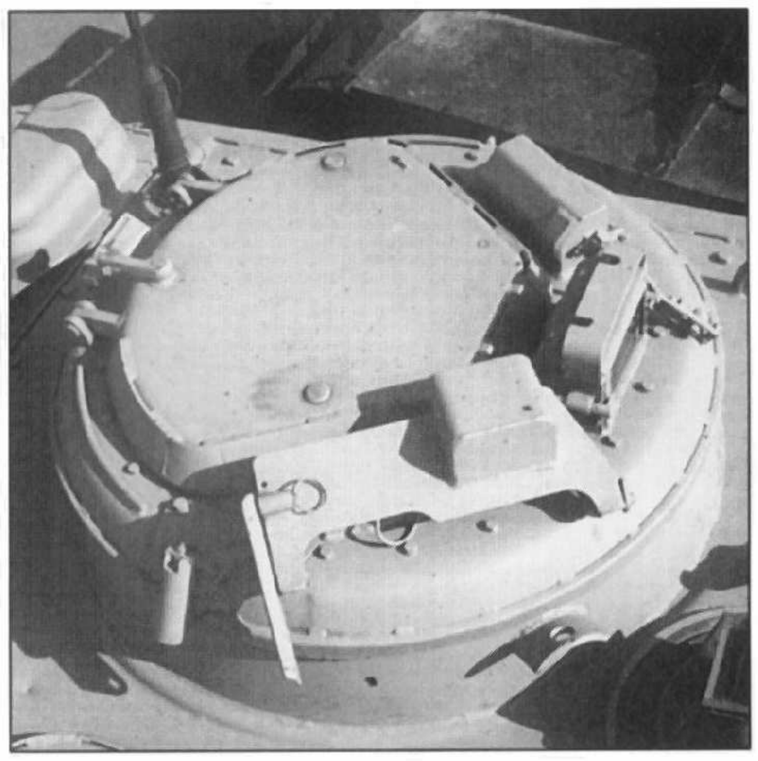
MMiR RECCE

DML ZSU-23-4M Shilka. Kit number 3518. Purchased from Discount Hobby Center, P.O. Box 370, Utica, New York 13503. (315) 733-3741. Price was $18.75, no sales tax, $4.25 shipping charge. Payment by credit card via phone. Originally backordered before available. After availability, shipping time was approximately one week.

MB Models ZSU-23-4M detail set. Kit number 2003. Purchased from MB Models, Inc. 7325A Cross County Road, Cross County Plaza, Charleston, South Carolina, 29418. Price was $17.95, no sales tax, $1.00 shipping charge. Payment by credit card (via fax: 803-552-0857), delivery time was approximately one week. Also available from hobby shops and mail order outlets.

References

T-72 Battlegroup. Grenadier Publishing. This publication contains many close-up photos of the ZSU-23 4M. The vehicles pictured are all in Iraqi service. Purchased from Squadron mail order: 1115 Crowley Drive, Carrollton, Texas 75011. Price was $13.95, no sales tax, $3.75 shipping charge. Payment by credit card (via fax: 214-242-3775), delivery time was approximately two weeks.

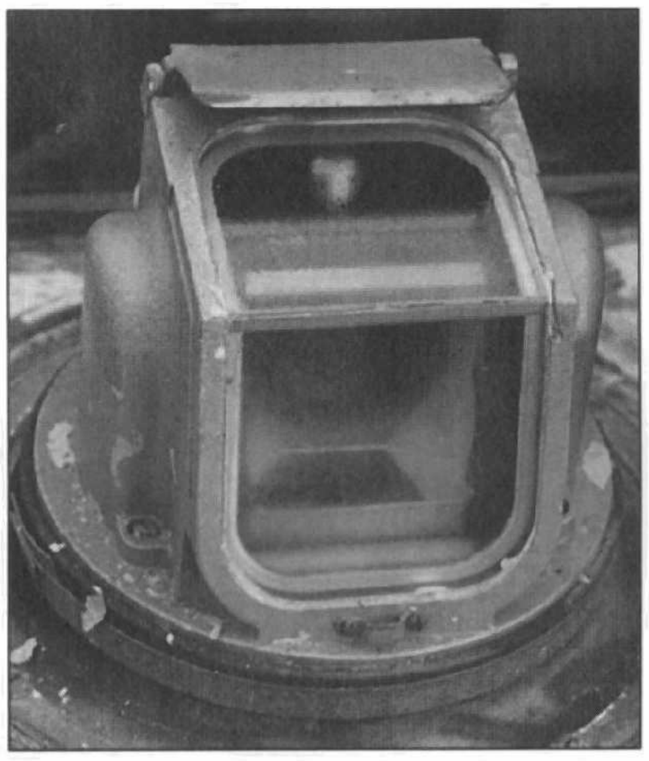


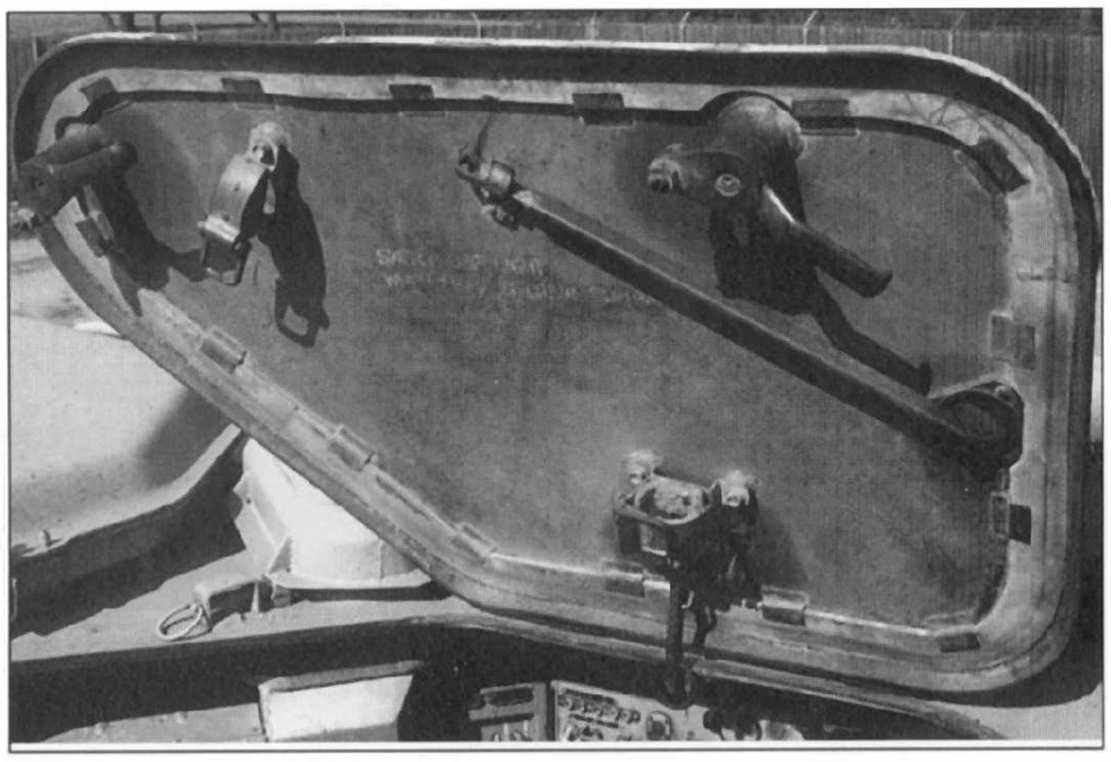
On these pages you'll find detail photos which will help fill the gaps on this rare vehicle.

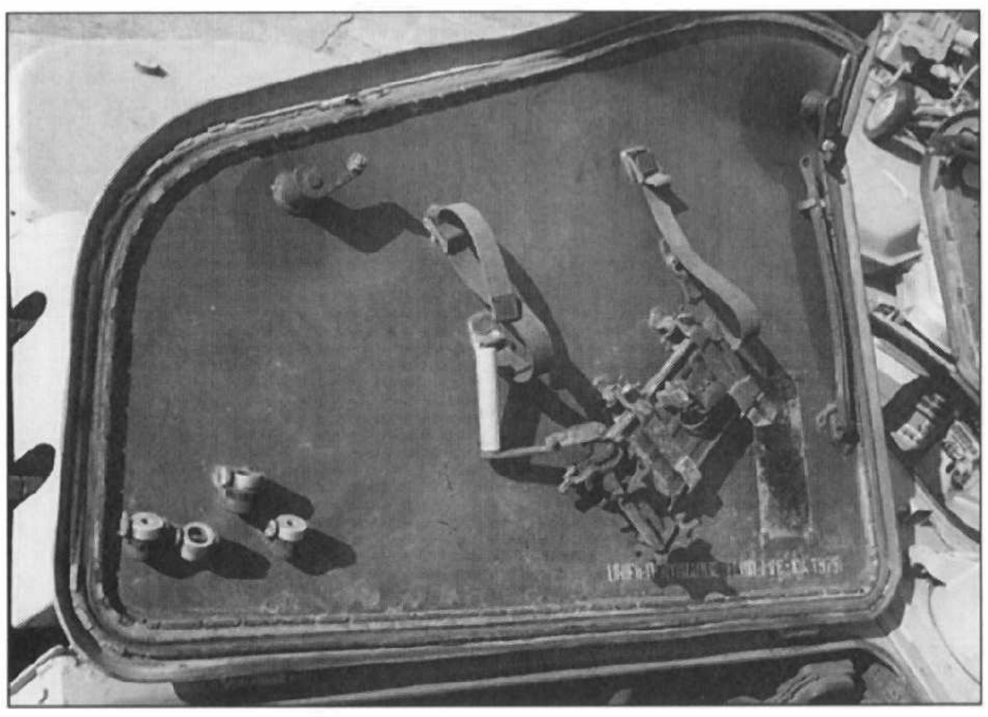
We've tried to cover the areas most needed for the DML kit.

⬅ Left: the commander's hatch, opened and closed.

➡ Right: main periscope. Far left: loader's hatch

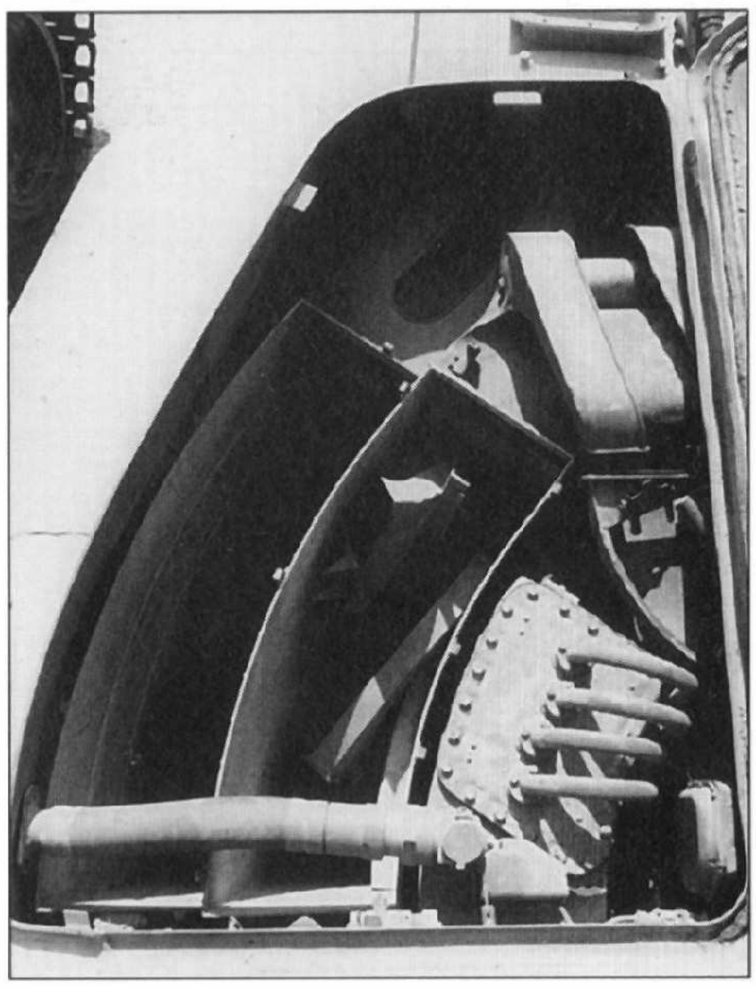


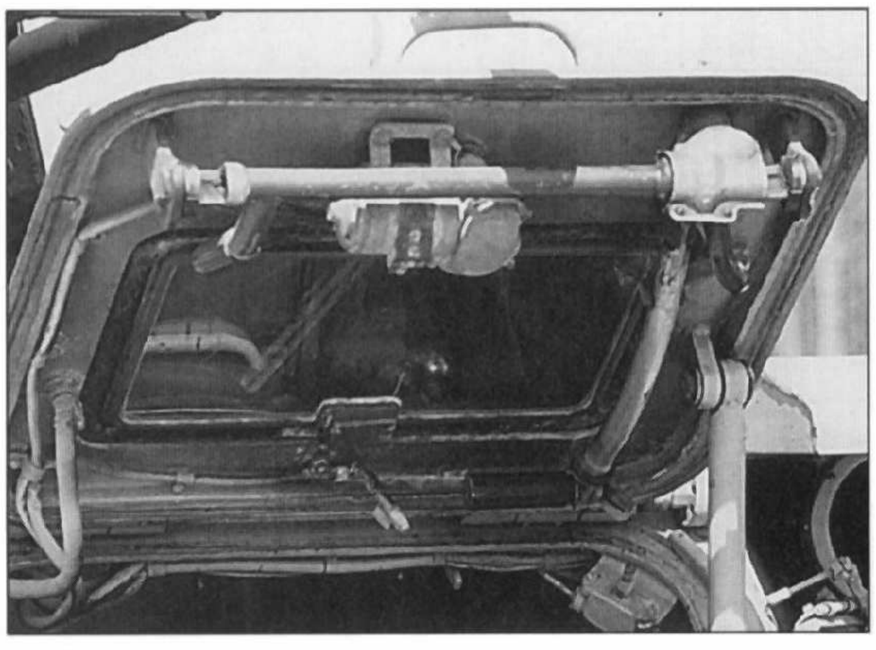




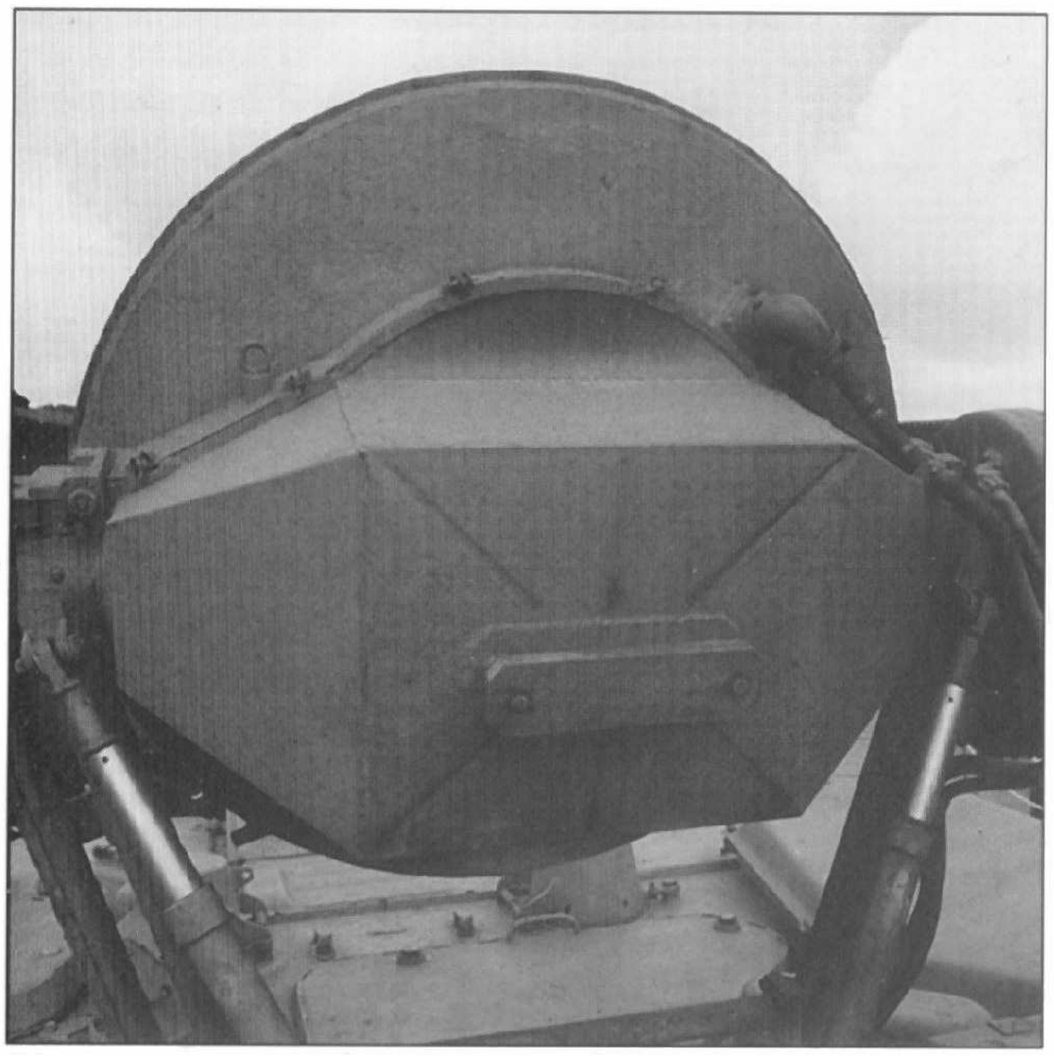
⬅ Left: underside of one of the main gun compartment hatches.

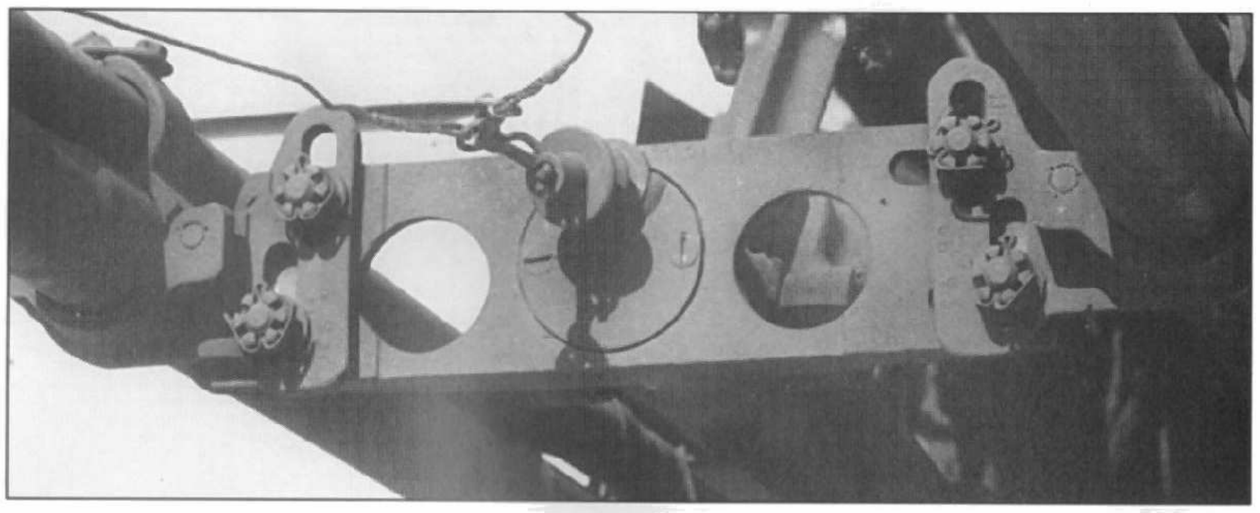
➡ The interior of the compartment. The curved tubs contained belts of ammunition.



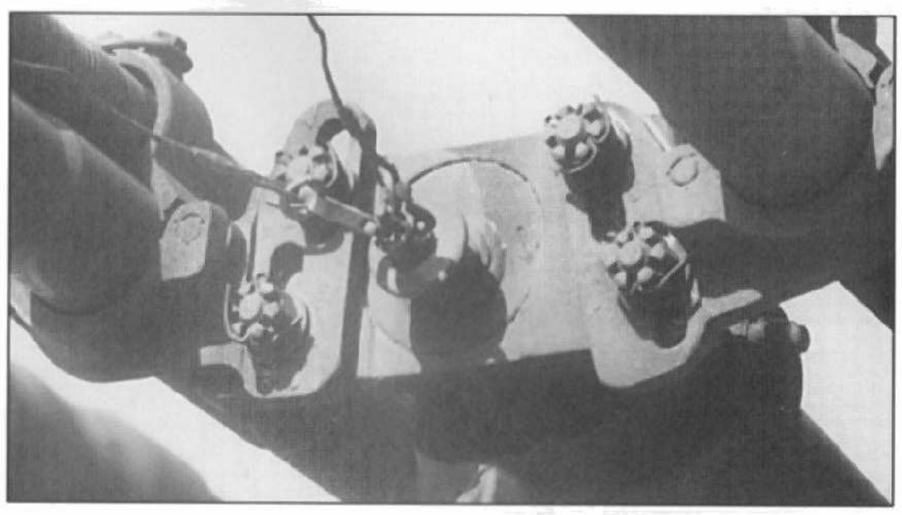


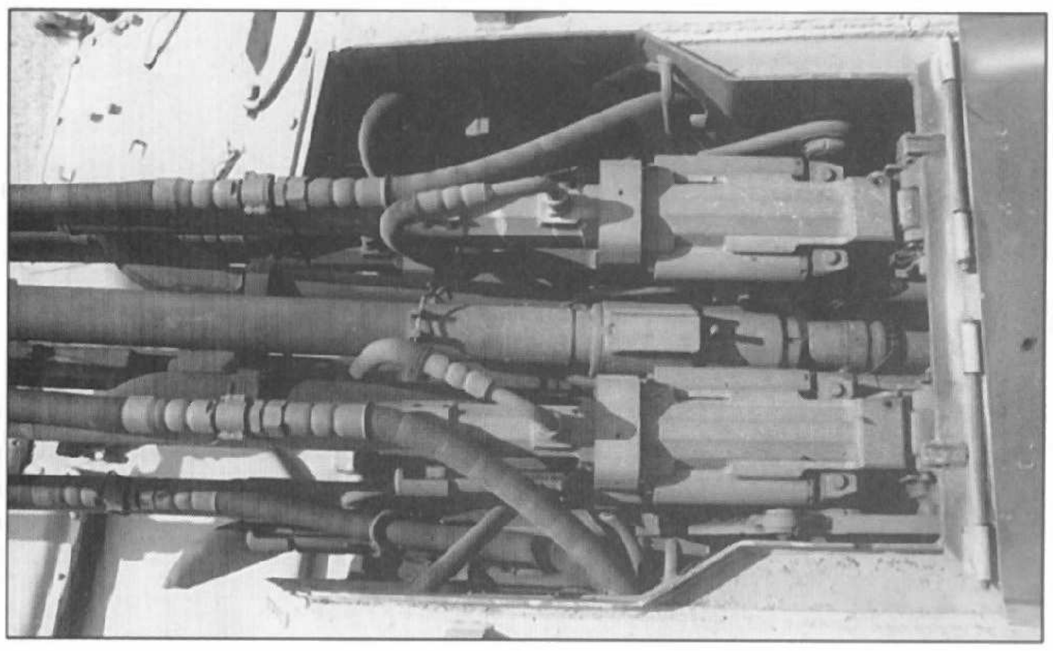
⬅ The driver's hatch in driving position and completely opened. Note the window and the wiper.



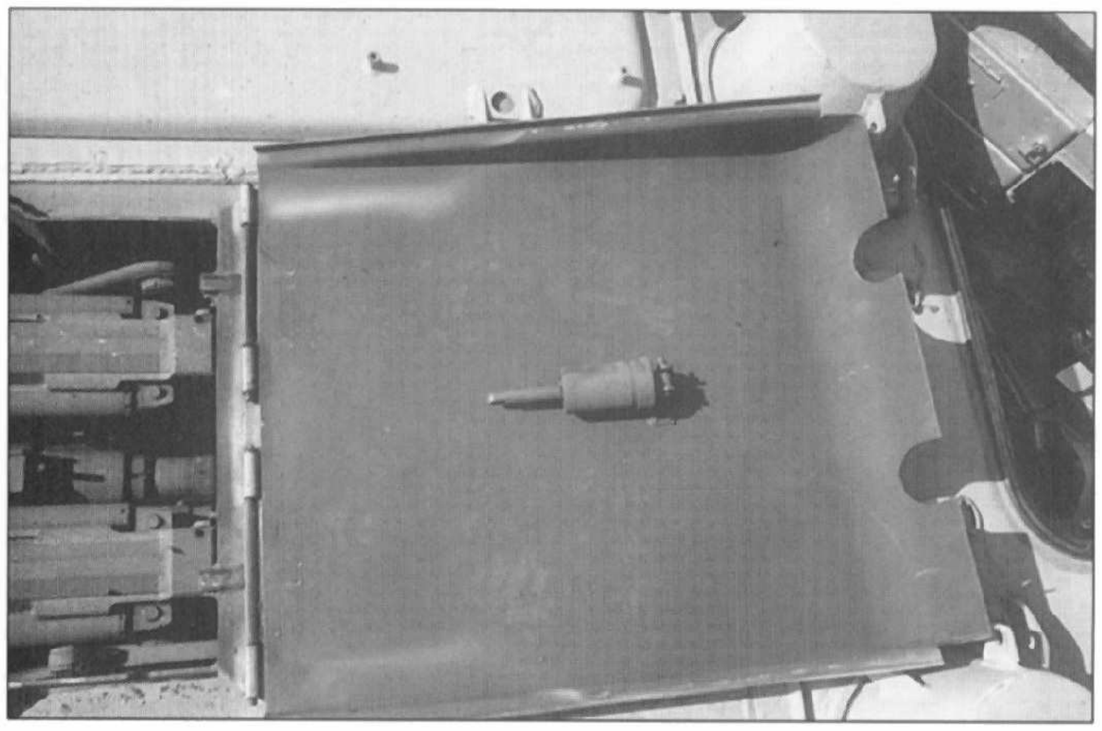


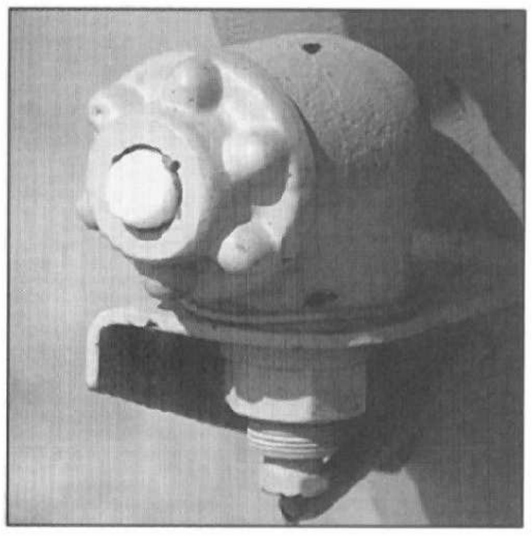
Left: the back of the radome. Above right and right: the large and small main gun brackets

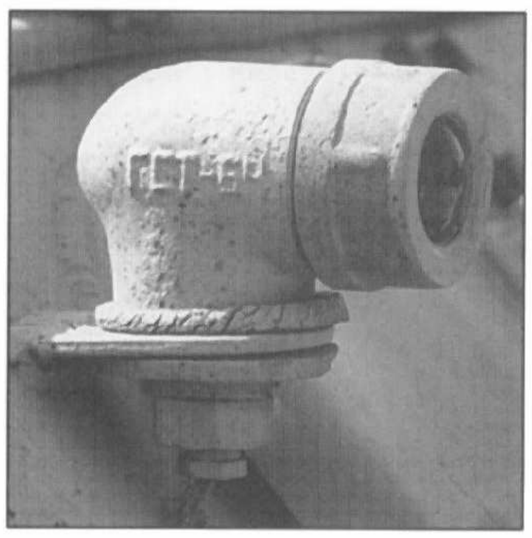




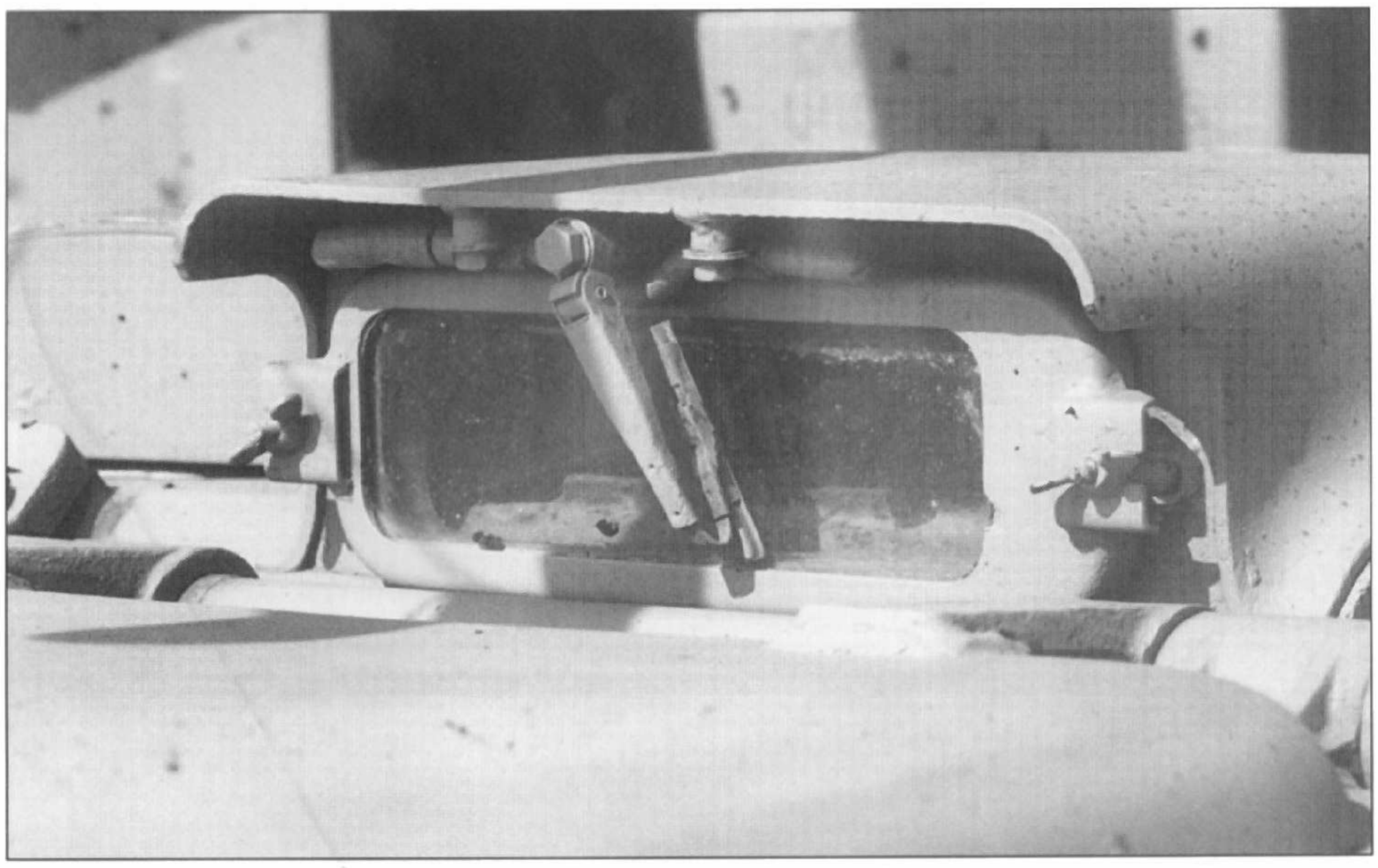
⬅
Left and left below: the main gun and it's cover. Right: the main gun array and it's covers.







Left: the two types of driving lights found on the ZSU. Above: overall view of the rear hull. Note the chains hanging from the stowage shelf.

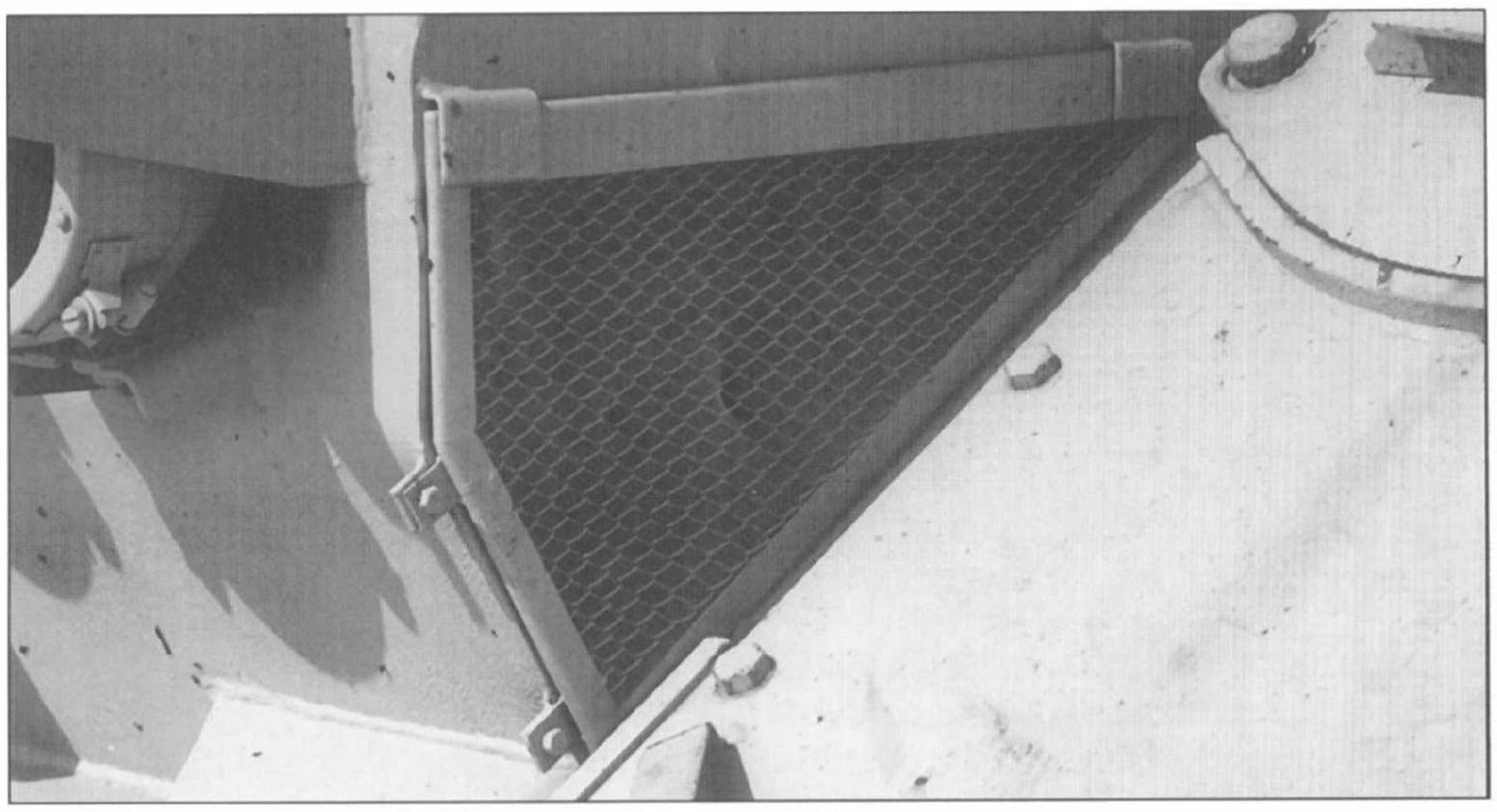


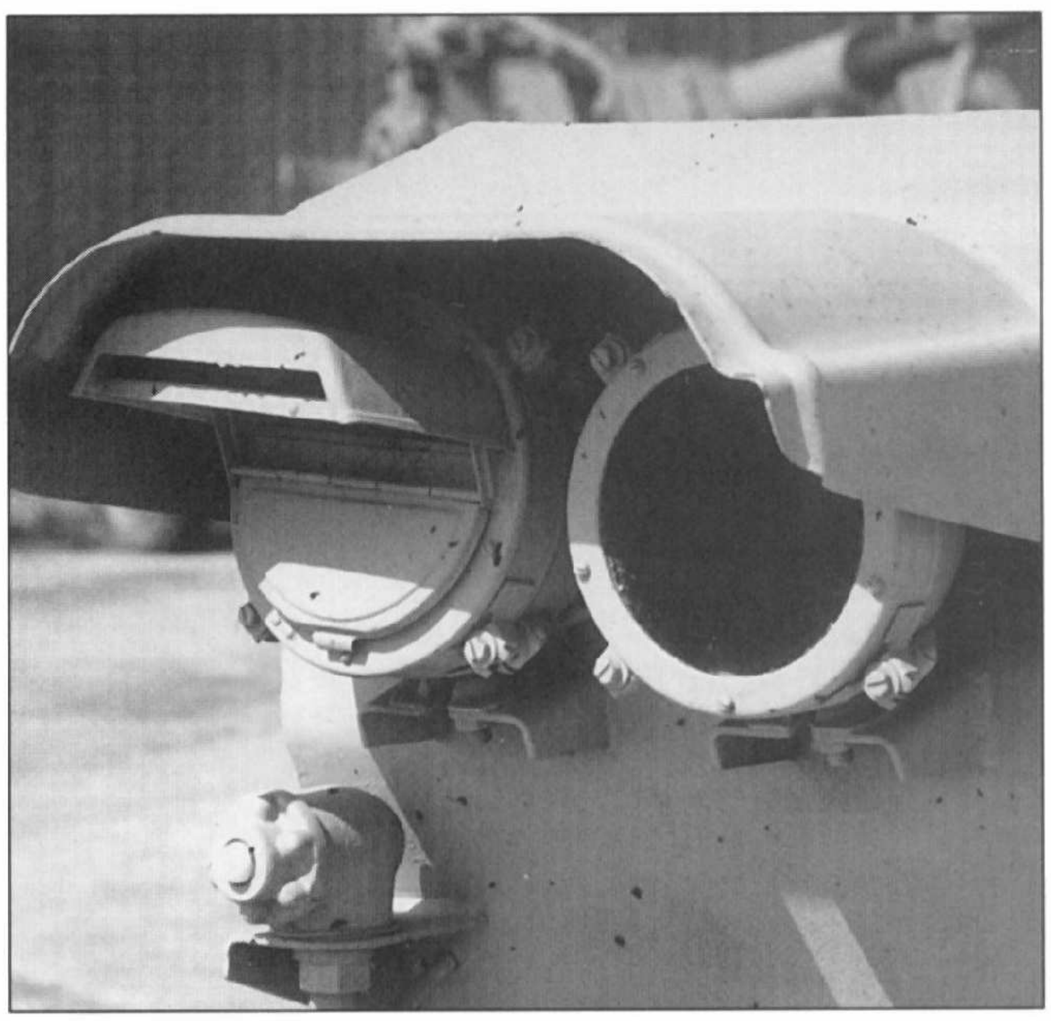
⬅
Left: covered vision port above the driver's position. Where do you get replacement blades for that?

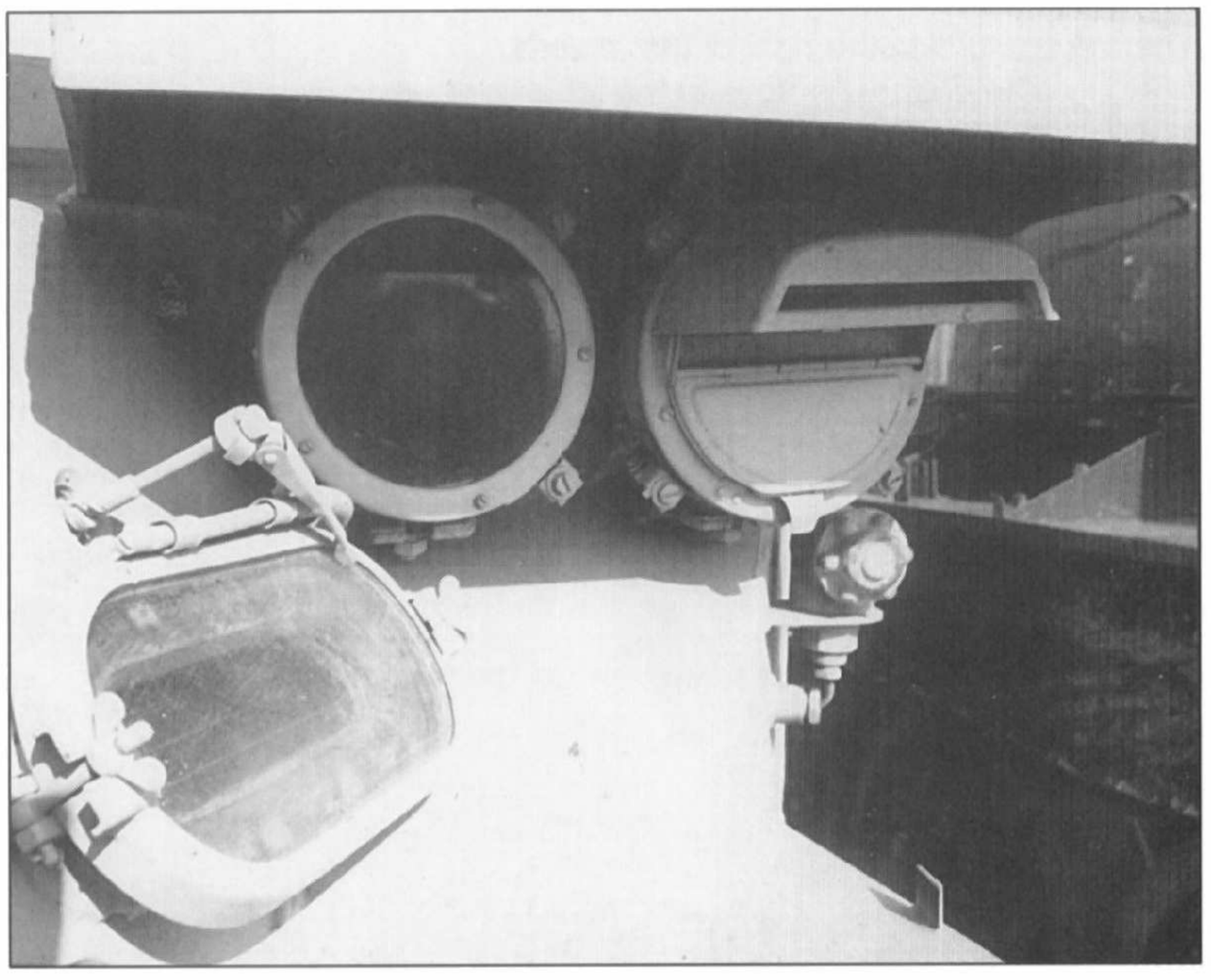
➡
Right: ventilation screen located on the right hand light pod. This is on the front right hand side of the vehicle.

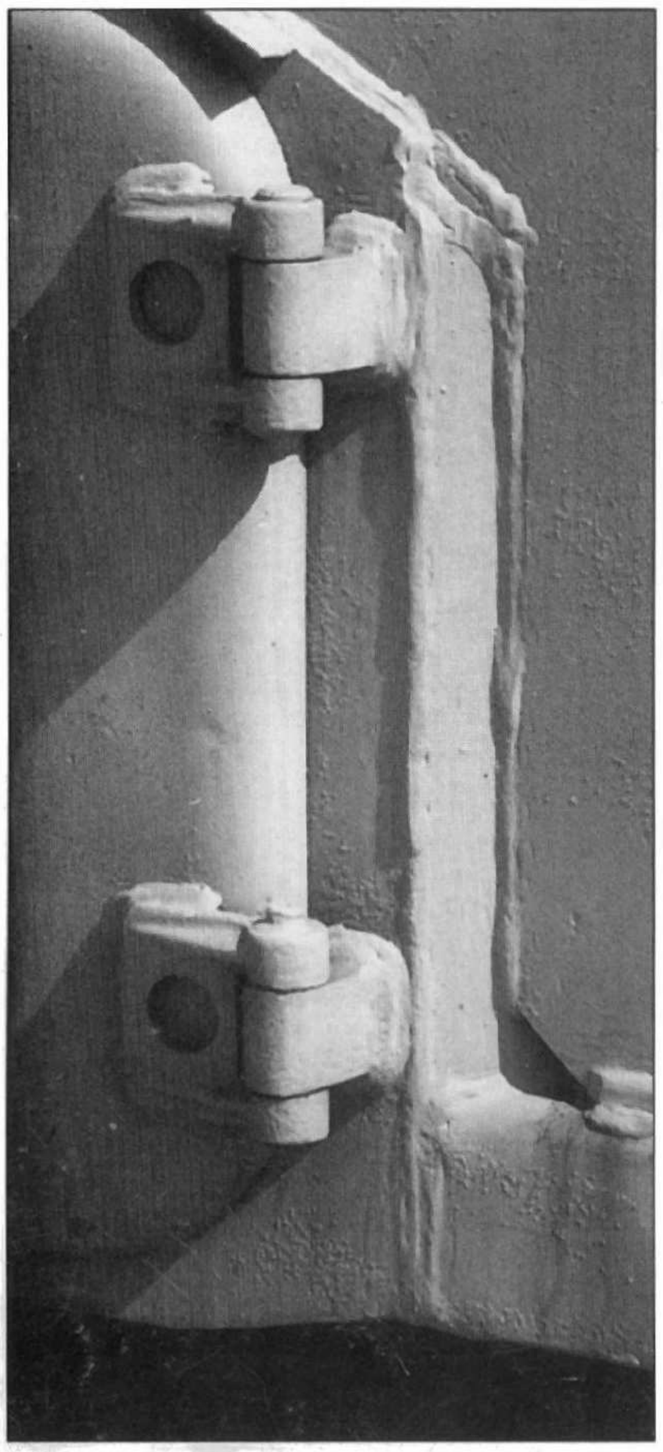
⬇⬅
Below left. front of the light pod. the IR driver's light is on the right.

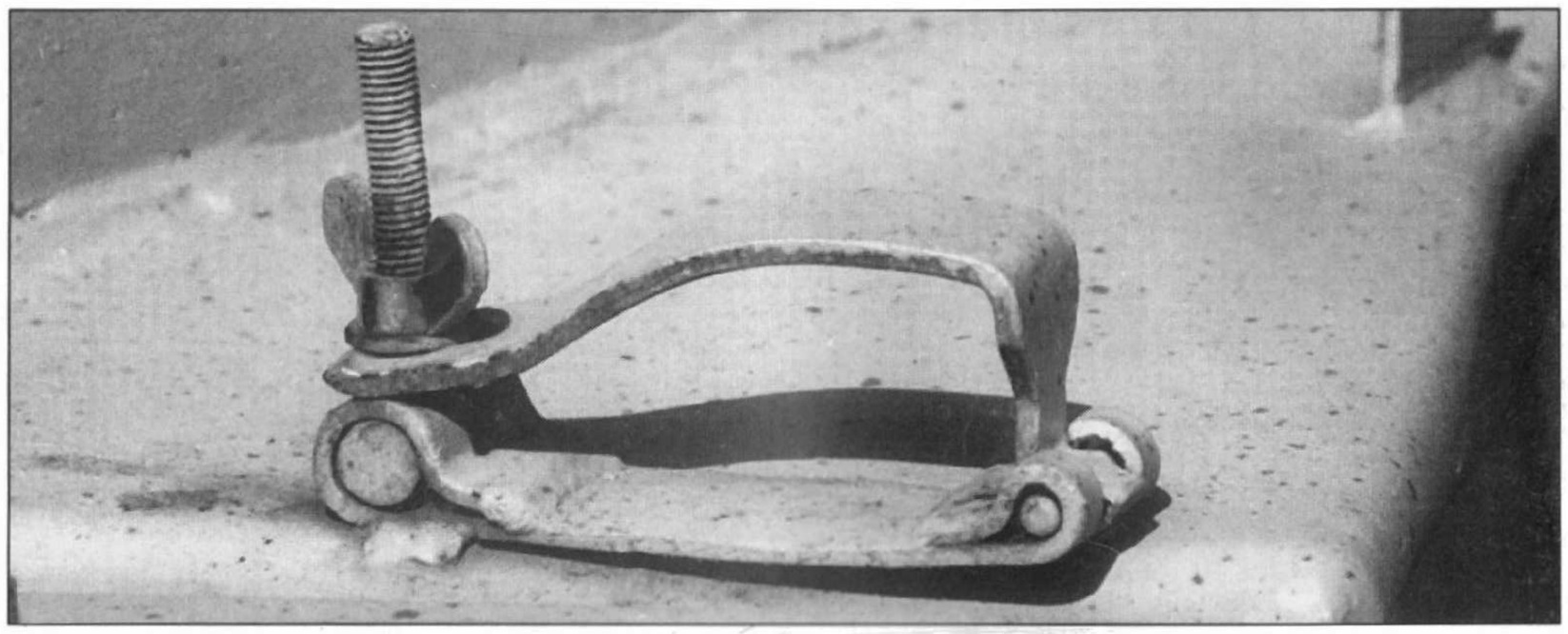
⬇➡
Below right: the driver's lights located on the front left hand side of the ZSU. The IR driver's light is on the left.

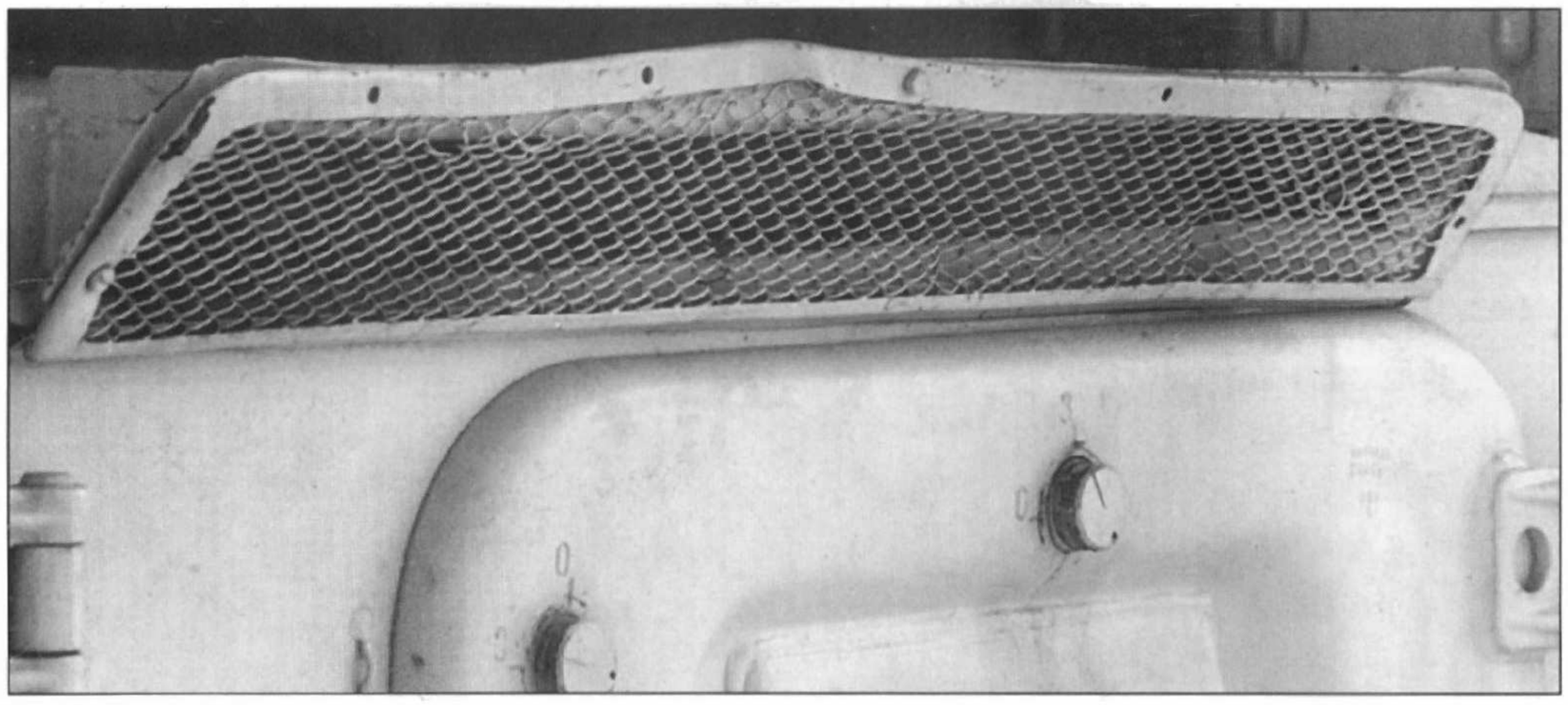




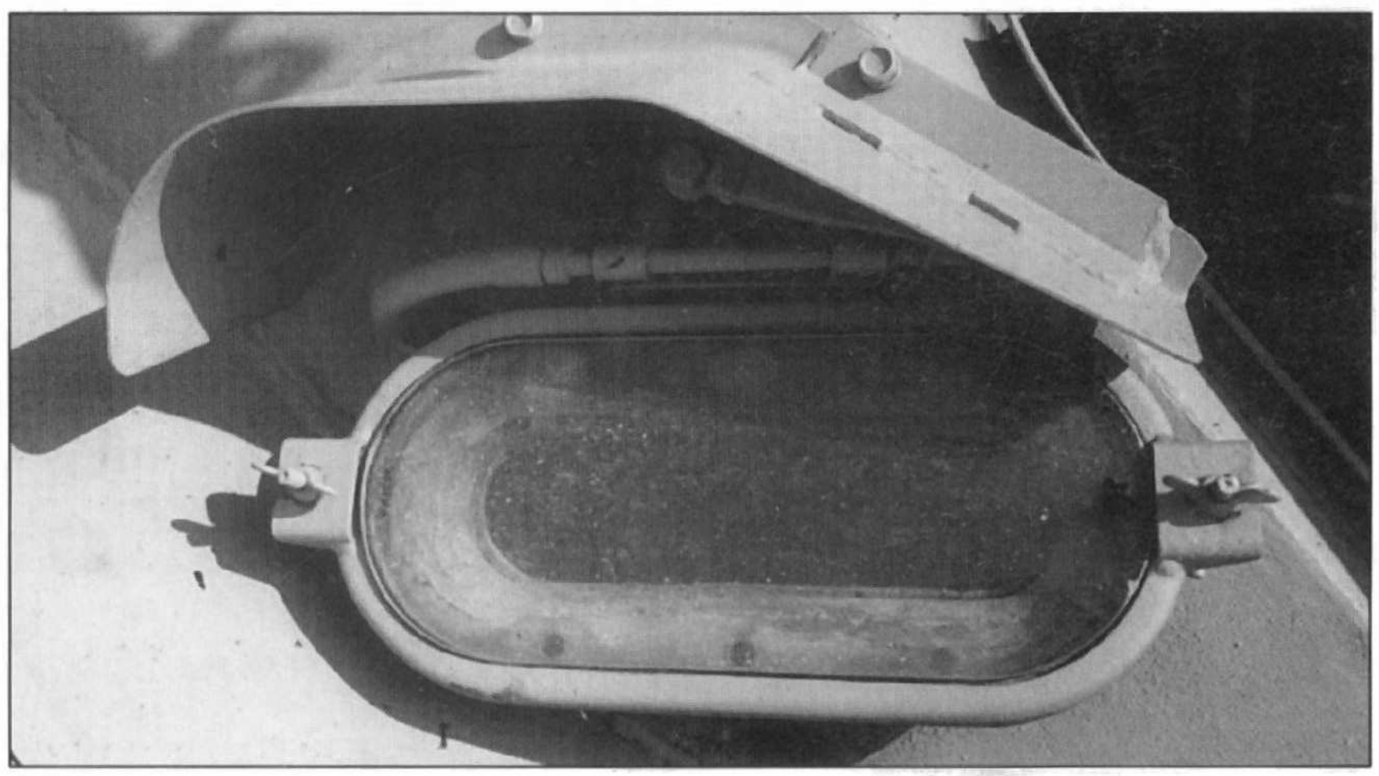
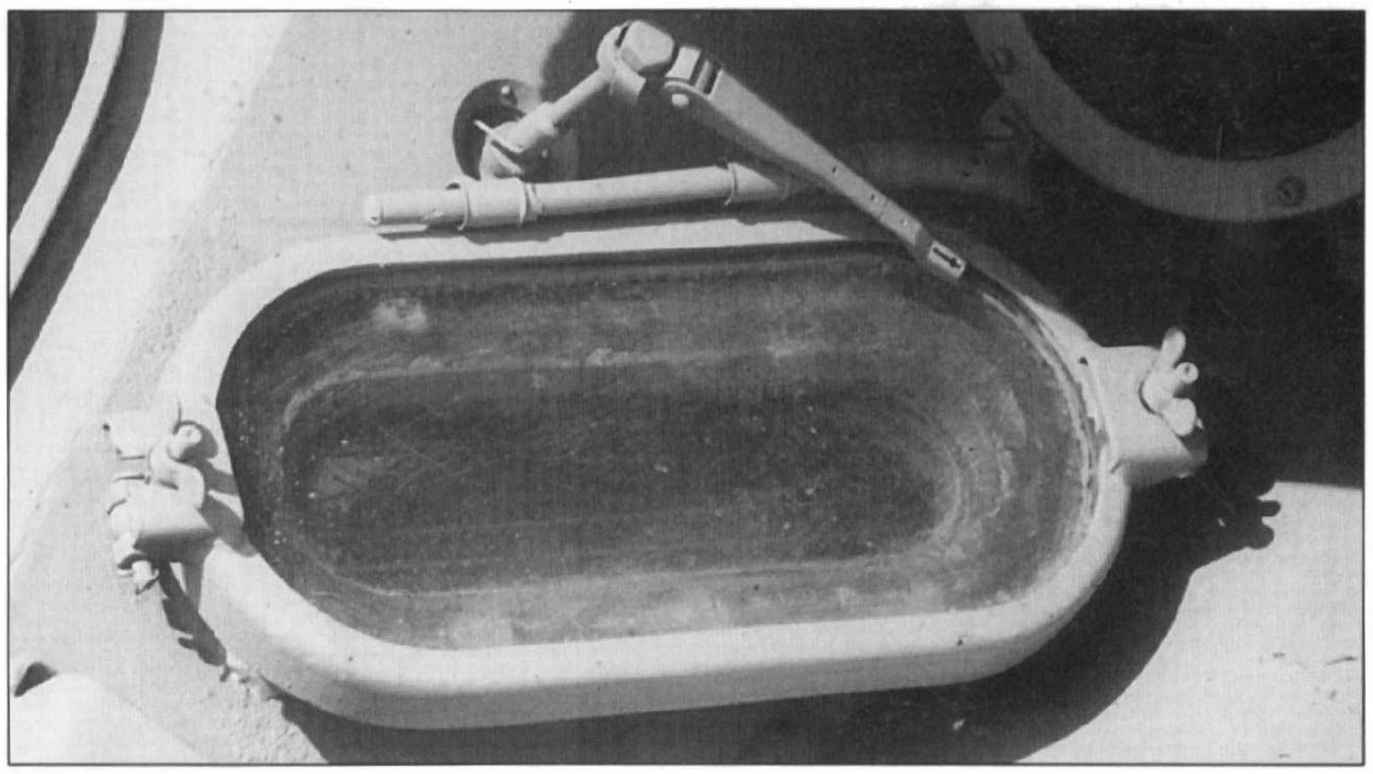








Above: hinge detail on one of the hull access doors. All of the access door hinges are identical to these.

Top right: tool clamp on the front left fender. Above right: right side exhaust screen. Just below are the locking bolts for the door.

Right: detail of the two front hull visor ports. The top photo is to the right of the driver's position. The bottom photo is to the left.